CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;
WITH SUITABLE DESCRIPTIONS;

BY

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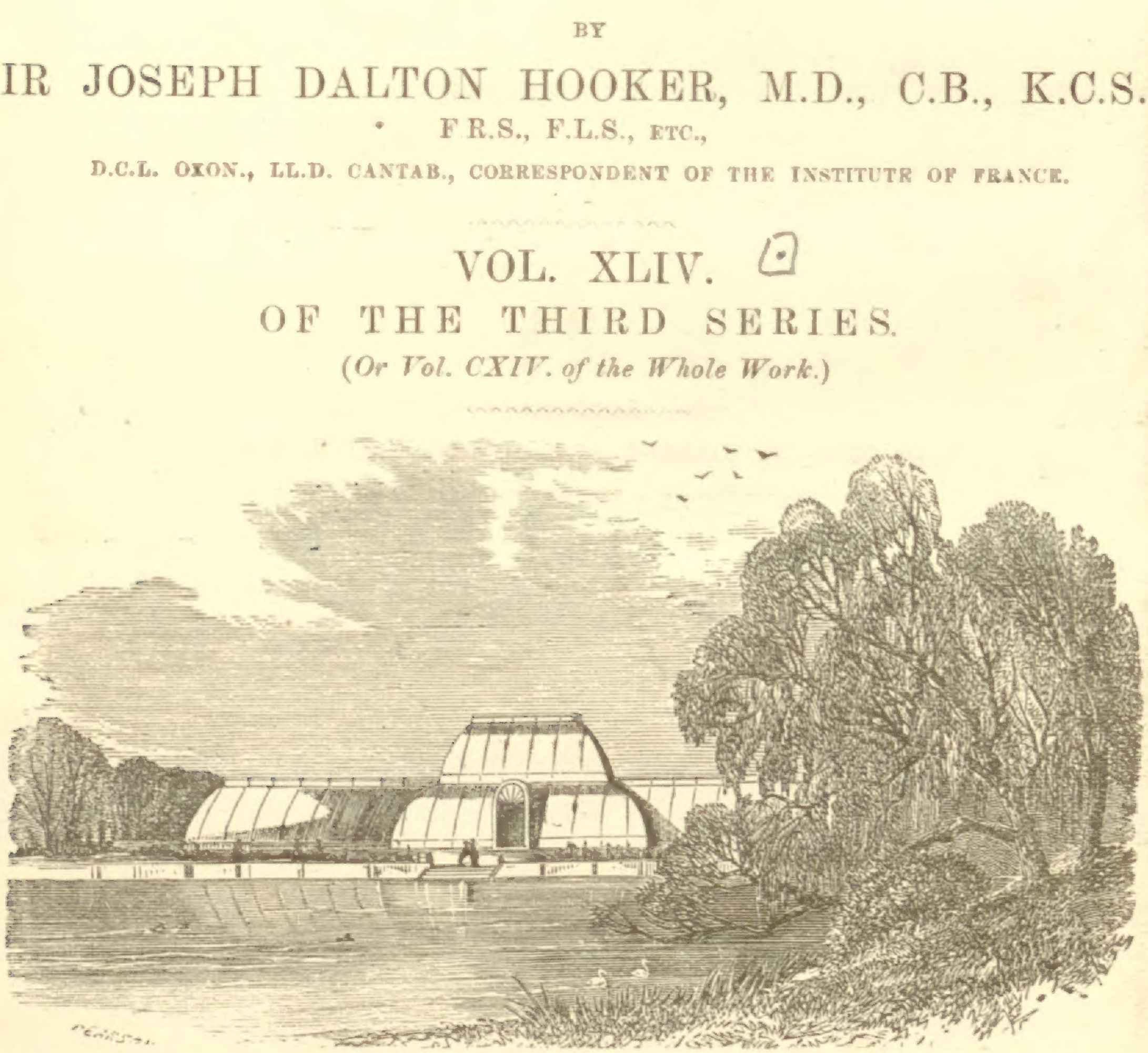

"Boon Nature scatter'd, free and wild,
Each plant or flower."

SIR WALTER SCOTT.

LONDON:
L. REEVE & CO., 5, HENRIETTA STREET, COVENT GARDEN.
1888.

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Mo. Bot. Garden,
1897.

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TO

C. B. CLARKE, Esq., M.A., F.R.S., F.L.S.

My dear Clarke,

By dedicating to you the Hundred and Fourteenth Volume of the Botanical Magazine, I avail myself of a long-desired opportunity of placing on record the high estimation in which your services to Botanical Science are held,—services emphasized by your arduous journeys for botanical exploration in all parts of India, and by your extensive and valuable publications on the vegetation of our Indian possessions.

I further take this opportunity of gratefully acknowledging the important aid you have been to me in the preparation of "The Flora of British India," by placing unreservedly at my disposal your immense Indian Herbarium and invaluable accompanying observations on the plants it contains, and by contributing to that work a series of carefully elaborated Natural Orders, which has both materially lightened my labours and facilitated the researches of our fellow-botanists in India.

Believe me, with great regard,

Faithfully yours,

JOS. D. HOOKER.

Royal Gardens, Kew,
December 1*st*, 1888.

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Imp

L. Reeve & Cº London.

Tab. 6973.

PHORMIUM Hookeri.

Native of New Zealand.

Nat. Ord. Liliaceæ.—Tribe Hemerocalleæ.

Genus Phormium, *Font.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 773.)

Phormium *Hookeri;* foliis ensiformibus flaccidis recurvis apice laceris utrinque et marginibus pallide læte viridibus concoloribus non glaucis, scapo inclinato, floribus gracile pedicellatis, sepalis lineari-lanceolatis acutis aurantiacis, petalis lineari-oblongis viridibus apicibus rotundatis recurvis, filamentis sanguineis, capsulis pendulis elongatis angustis tortis.

P. Hookeri, *Gunn mss. in Herb. Hook.*

In the garden of my brother-in-law, Dr. Lombe of Torquay, are growing luxuriantly side by side three very distinct-looking species of New Zealand flax, of which he obtained two under the names respectively of Swamp flax and Mountain flax, from a nurseryman; the third, or Mountain flax, he raised himself from seed given him by Mr. Grace, a missionary, who, he is informed, resided at Wanganui, in the Northern Island of New Zealand. Dr. Lombe pointed out to me the remarkable differences in these three plants, which were indeed very obvious, but whereas the Swamp flax and Hill flax were both familiar to me as recognized forms of *P. tenax*, having stiff leaves glaucous beneath and with coloured margins, that raised from Mr. Grace's seeds differed wholly from the above and from any form of either of the two known species (*P. tenax* and *P. Colensoi*) in the flatter flaccid recurved pale green unbordered leaves with fissured tips at an early age, and which are rolled back so that their tips reach or lay on the ground. On comparing this latter plant with Herbarium specimens of *Phormium*, I had no difficulty in recognizing its identity with a species sent to me twenty years ago by my late friend Ronald Gunn, F.R.S., of Tasmania, who had found it in 1864, when on a visit which he paid to New Zealand as a member of a Commission invited to settle the position of the capital of the island. This species he

recognized as being very different from any form of *P. tenax*, and desired it should bear my name. The locality in which Mr. Gunn found it was the Waitangi river, about thirty or forty miles from its mouth, where it grew pendulous from almost perpendicular rocks, in great abundance.

In size and habit the present species resembles *P. Colensoi* far more than *P. tenax*, but is more different from both of these than they are from one another. Indeed the varieties of these latter plants are so puzzling that it is an open question whether they may not be found to pass into one another, or so to intercross that specimens are to be found of which it is difficult to say to which they should be referred. Captain Cook, the discoverer of the genus in 1770 speaks of two kinds, a yellow-flowered and red-flowered, a character which in a general way distinguishes *tenax* from *Colensoi*, and he figures one from Dusky Bay ("Voyage to the South Pole, 1772—1775," vol. i. t. 23) as the Flax plant of New Zealand, which closely resembles *P. Hookeri*. Colenso, in the "Transactions of the New Zealand Institute," vol. i. (1868), p. 15, also recognizes two species (*tenax* and *Colensoi*) as growing throughout the Northern Island, at all elevations from the sea coast to an elevation of 4000 feet, and in all soils and situations; he, however, says elsewhere, that both vary in the colour of the flowers, yellow green and red, and both in the length, breadth, and amount of twisting of the capsules, and in the thickness of their valves; to which I may add that the seeds of both these kinds and of *P. Hookeri* are identical in size, form, colour and structure. Seeds of *P. Hookeri* were sent to the Royal Gardens by Dr. Lombe in 1881, and the plants raised therefrom flourish in the Temperate House, but have not flowered.

I have given on the plate with *P. Hookeri* a figure of the flower of Dr. Lombe's "Swamp flax;" it differs considerably from that of *P. tenax* figured at Plate 3199 of this work, and I shall hope on a future occasion to publish it for the MAGAZINE.

P. Hookeri flowers in July at Torquay, the scape with inflorescence attaining the height of five feet.—*J. D. H.*

Fig. 1, Reduced figure of the whole plant; 2, leaf, and 3, portion of inflorescence, both of the natural size; 4, flower cut vertically; 5, anther; 6, ovary; 7, transverse section of ditto:—*figs. 4–7 all enlarged.*

M. S. del, J.N. Fitch lith.

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Tab. 6974.

CERATOTHECA triloba.

Native of Natal.

Nat. Ord. Pedalineæ.—Tribe Sesameæ.

Genus Ceratotheca, *Endlicher*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1059.)

Ceratotheca *triloba;* elata, erecta, basi ramosa, pubescens, caule profunde sulcato, foliis inferioribus longe petiolatis late ovato-cordatis integris v. 3-lobis grosse crenato-serratis superioribus breviter petiolatis triangulari-ovatis sinuato-dentatis, floralibus sessilibus ovatis, floribus breviter pedicellatis nutantibus, sepalis subæqualibus lanceolatis deciduis, corollæ declinatæ tubo piloso, limbi bilabiati labio superiore e lobis 4 late ovato-rotundatis, inferiore duplo longiore pendulo oblongo-ovato, ovario cylindraceo piloso, stigmatibus subulatis, capsula oblongo-cylindracea bicornuta.

C. triloba, *E. Meyer in Plant. Drège.*

Sporledera triloba, *Bernhardi in Linnæa* (1842) p. 41; *A. De Candolle Prodr.* vol. ix. p. 252; *Gard. Chron.* Ser. 3, vol. ii. (1887) p. 492, fig. 99.

A native of Natal, closely allied to the common cultivated Indian and Oriental *Sesamum indicum*, Linn. (of which there is an indifferent figure in this work, Plate 1688), but a very much handsomer plant. Indeed *Ceratotheca* differs from the older genus in no important characters but the two-horned capsule, and might well be regarded as a section of it. *Ceratotheca* itself has been subdivided into two genera, but, as pointed out in the "Genera Plantarum," on imaginary grounds, for *Sporledera*, which was invented for *C. triloba*, does not even form a section of *Ceratotheca*.

C. triloba has been collected by many travellers, and over a wide tract of country, including Natal, the Transvaal, Bechuana land and Malebele country. The Kew Garden specimens which were raised from seed sent by Mr. Wood from the Natal Botanical Garden are very much taller and more luxuriant than the native ones; they were raised from seed that arrived in December, 1886, and flowered in September of the following year.

Descr. A tall pubescent herb with the habit of a foxglove. *Stem* five feet high, erect, stout, herbaceous and rather succulent, with short branches from the base, simple

higher up, obtusely four-angled, the angles rounded, the faces deeply grooved. *Leaves* polymorphous, lower long-petioled, from broadly ovate-cordate or almost rounded to broadly triangular and three-lobed, with the lateral lobes spreading, margins coarsely crenate, surfaces more or less pubescent; broadest leaves eight inches across the lobes; petiole five to six inches, stout, hairy; floral leaves narrowly ovate, much shorter than the flowers, but longer than the calyx. *Flowers* in opposite pairs, very shortly pedicelled, pedicels erect, with a minute imperfect flower at the base of each, consisting of truncate five-lobuled calyx, five rounded lobules representing the corolla and a minute two-lobed stylode. *Calyx* erect; obscurely two-lipped, divided to the base into five narrowly lanceolate erect deciduous hairy sepals, half an inch long. *Corolla* three inches long, pilose; tube with a gibbous decurved base, trumpet-shaped at the tip, gradually expanding into the very oblique five-lobed, sub-two-lipped limb, of which the four upper lobes are broadly shortly ovate obtuse and recurved, the fifth or lower is pendulous, oblong, obtuse. *Stamens* inserted on the tube just above the gibbous base, filaments glabrous; anthers linear-oblong, slightly hispid at the base. *Disk* lobed. *Ovary* cylindric, pubescent, top rounded; style slender, with two short subulate spreading stigmatic arms.—*J. D. H.*

Fig. 1, Base of corolla and stamens; 2, anther; 3, ovary, style and stigma; 4, transverse section of ovary; 5, ovules; 6, an imperfectly developed flower at the base of the pedicel; 7, the same cut open vertically:—*all enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks Day & Son lmp

Tab. 6975.

THUNBERGIA affinis.

Native of Zanzibar.

Nat. Ord. Acanthaceæ.—Tribe Thunbergieæ.

Genus Thunbergia, *Linn. f.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 1072.)

Thunbergia (Euthunbergia) *affinis*; frutex suberectus, glaberrimus, ramulis 4-gonis, foliis breviter petiolatis ellipticis acutis obtusisve integerrimis basi acutis, floribus subsolitariis amplis, bracteis late ovatis acutis, calycis glandulosi laciniis 10–11 subulatis, una longiore, corollæ violaceæ tubo bracteis duplo longiore supra basin recurvo, lobis amplis rotundatis retusis, filamentorum stylique apicibus glandulosis, antherarum loculis setosis, stigmatis lobo inferiore cucullato superiore erecto truncato.

T. affinis, *S. Moore in Britten's Journ. Bot.* vol. xviii. (1880), p. 5; *Gard. Chron.* Ser. 3, vol. ii. (1887), p. 460, fig. 94.

I think it is extremely doubtful whether this beautiful plant will prove to be anything more than an as it were glorified form of the old *T. erecta*, T. Anders. (*Meyenia erecta*, Benth.; Bot. Mag., t. 5013), which is a native of the shores of the Gulf of Guinea. This latter plant differs in its more ovate acuminate and strongly sinuate leaves, and its much smaller shorter bracts and flowers; its lower branches are more strongly four-angled, and the calycine segments are shorter. On the other hand, the form of the flower is the same in both, and in those important organs, the anthers and the curious stigma, they are absolute identity. The fact is, that the more the botanist knows of the tropical African Flora, the more impressed he is with the wide area occupied by its species, and the indefiniteness of the characters of so many of them. The genus *Tinnea* affords an example of this, very analogous to that of these Thunbergias; for *T. æthiopica*, var. *dentata* (Plate 6744), bears the same relation in point of smaller size of leaves, and their being toothed, and of bracts and flowers, to the original *T. æthiopica* (Plate 5637), that *T. erecta* does to *T. affinis*; indeed, had the latter not already been distinguished and described and named as a different species, it is very probable that it would now appear in this work

as a form of *T. erecta*. This is one of those cases in which expediency must go into the balance, and where it kicks the beam. For horticultural purposes the two will be always distinguished, and the palm given to *T. affinis*. *Landolphia florida*, figured only two months ago, is another conspicuous instance of a very widely distributed and variable tropical African plant. Except, perhaps, New Zealand, I know of no considerable botanico-geographical area in which the species seem to be as imperfectly differentiated as in tropical Africa. With regard to the generic name of *Meyenia*, it is fortunately untenable botanically, for it was a mistake to refer *T. erecta* to it. As T. Anderson has pointed out, in his paper on African *Acanthaceæ* in the Journal of the Linnæan Society (vol. vii. p. 18), it is the Meyenias that have a truncate calyx, and the true Thunbergias a many-toothed one.

T. affinis and *erecta* have occasionally very small stipular thorns on the branches at the base of the petioles, and both have occasional pulvilli of hairs in the leaf axils, which is the character of Mr. S. Moore's var. *pubiramata*.

The area over which *T. affinis* extends in Africa is much wider than that of *T. erecta*. It was first described by Mr. Moore from Mombassa specimens collected by Hildebrandt, and Angola ones of Monteiro. In the latter country it was collected by Welwitsch, in the Shire Highlands by Buchanan, and on the Zanzibar coast by Sir John Kirk, to whom the Royal Gardens are indebted for the plants from which the figure here given was taken. It had, however, previously been received from the Imperial Botanical Gardens of Berlin.

T. affinis is a handsome rambling shrub, attaining, if trained, twelve feet in height, with slender flexuous branches. In a pot it remains dwarf and compact. It flowered in the Palm House in September, 1886.—*J. D. H.*

Fig. 1, Calyx and ovary; 2 and 3, anthers; 4, stigma; 5, ovary and disk; 6, vertical section of the same:—*all enlarged*.

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Tab. 6976.

PRUNUS Jacquemontii.

Native of the North-West Himalaya.

Nat. Ord. Rosaceæ.—Tribe Pruneæ.

Genus Prunus, *L.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 609.)

Prunus (Amygdalus) *Jacquemontii*; frutex fere glaberrimus, foliis breviter petiolatis oblongis lanceolatis ellipticis subobovatisve acutis argute serrulatis glabris v. subtus puberulis, stipulis parvis laceris deciduis, petiolo eglanduloso, floribus præcocibus ad axillas sub-binis breviter pedicellatis, calycis tubo cylindraceo basi rotundato, lobis brevibus ovatis acutis, petalis orbiculatibus obovatisve roseis, ovario glaberrimo, stylo elongato, drupa parva globosa, putamine subgloboso lævi.

P. Jacquémontii, *Hook. f. Fl. Brit. Ind.* vol. i. p. 314.

P. humilis, *Brandis For. Flor. N.-W. and Central India*, p. 194 (*non Bunge*).

Amygdalus humilis, *Edgew. in Trans. Linn. Soc.* vol. xx. p. 44.

A very common shrub in the drier regions of the North-West Himalaya, forming a bush six to ten feet high, from the province of Garwhal (east of Nepal) westward, at elevations of 9600 to 12,000 feet, extending northwards into Tibet and westwards into Afghanistan. It was first recognized by Edgeworth, who published it as *Amygdalus humilis*, but without any reference to Bunge's *Prunus humilis* of North China, which, however, so much resembles *P. Jacquemontii* that Brandis has alluded to the latter in his Forest Flora as being the same with the Chinese plant. This latter reference tends to show that Edgeworth may have by oversight omitted to cite Bunge's plant as a synonym. There are, indeed, some differences between Edgeworth's description of his *A. humilis* and the plant now figured, for that author describes the calyx-lobes as crenulate. Unfortunately no specimens of Edgeworth's plant exist in our Herbaria. Bunge's *P. humilis* may at once be distinguished by the long fascicled pedicels and turbinate calyx with reflexed lobes.

In the Flora of British India I have referred *P. Jacquemontii* (which I had then seen only in fruit) with doubt to

a section of the genus with the flowers appearing before the leaves; this they appear to do, but the interval between flowering and leafing is not very long. The Kew plant, which was raised from seeds sent by Dr. Aitchison from the Kurrum Valley in Afghanistan at an elevation of about 6000 feet, flowered in May, 1887, and the leaves were fully developed in the following July.

Descr. A shrub with stout slender divaricate branches, quite glabrous, or puberulous in the leaf axils, buds and sometimes the leaves beneath; branches not spinescent. *Leaves* two to two and a half inches long, variable in form, ovate, ovate-lanceolate, elliptic or subobovate, acute or acuminate, serrulate; nerves eight to ten pairs; petiole one-sixth of an inch, base eglandular; stipules slender, laciniate, caducous. *Flowers* often in pairs, very shortly pedicelled. *Calyx-tube* one-sixth to a quarter of an inch long, tubular, cylindric, smooth, glabrous, striate, base rounded; lobes not half the length of the tube, ovate, acute, hairy within. *Petals* one-sixth of an inch broad, nearly orbicular, pink. *Stamens* about twenty. *Ovary* obliquely ovoid, quite glabrous, narrowed into the long slender style. *Drupe* globose, as large as the finger nail, red, juicy; stone nearly globose, a quarter to one-third of an inch in diameter, quite smooth.—*J. D. H.*

Fig. 1, Branch and stipules; 2, flower; 3, petal; 4 and 5, stamens; 6, pistil; 7, stone; 8, drupe of the natural size:—*all but figs. 7 and 8 enlarged.*

M S. del. J N Fitch lith.

L Reeve & C° London

Tab. 6977.

MASDEVALLIA Chestertoni.

Native of New Grenada.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Masdevallia, *Ruiz & Pav.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 492.)

Masdevallia *Chestertoni*; cæspitosa, foliis subsessilibus oblanceolatis subacutis dorso carinatis basi vaginatis vaginis truncato-acutatis, scapis elongatis gracilibus pendulis unifloris, vaginis remotis appressis, floribus amplis, sepalis patentissimis subæqualibus ovato-rotundatis abrupte in caudas elongatas constrictis luride viridibus purpureo-maculatis conspersisque, dorsalis angustioris caudicula apice recta, lateralibus latioribus ad medium connatis caudiculis apice incurvis v. involutis, petalis basi columnæ affixis æque parallelis sed brevioribus erectis angustis compressis apicibus incrassatis truncatis cucullatis, labello sepalis breviore pedi columnæ affixo roseo, ungue sigmoideo profunde sulcato, sulco bilamellato, limbo reniformi concavo marginibus incurvis integris, disco nervis sanguineis radiantibus furcatis instructo, columna incurva aptera, pede breviuscula.

M. Chestertoni, *Rchb. f. in Gard. Chron.* vol. xix. (1883) p. 532.

The genus *Masdevallia* is now supposed to contain at least a hundred species known to have been under cultivation, and most of them first of all introduced into England. These present groups which most diverse in habit, in inflorescence, and in the forms and arrangement of the floral organs; in which respects (of diversity of character) I suspect that the genus is hardly to be matched amongst Orchids. Being highly coloured, they form a subject for an illustrated monograph so attractive, and that would be so useful, that it is a matter of surprise that no one has attempted such a work. A fraction of the labour and cost expended on gaudy pictures of well-known Orchids would, if expended on *Masdevallia*, prove a boon to Botanists and Horticulturists. Is there none among the many wealthy growers of these beautiful plants that would undertake to provide means for the execution of such a work?

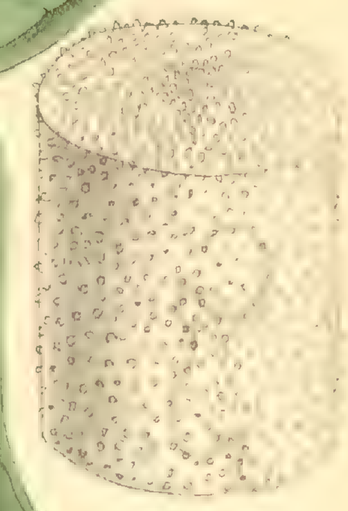
M. Chestertoni was, according to Dr. Reichenbach, discovered and introduced by Mr. Chesterton, a collector for Mr. F. Sander, and a justly lamented traveller. The

illustrious Orchidologist remarks that it belongs to the same section as *M. Nycterinia* and *bella*, but may be immediately recognized by its very curious petals.

The specimen figured was presented to the Royal Gardens by a very liberal contributor, Mr. F. Sander, of St. Albans. It flowered in September of last year.

Descr. Tufted. *Leaves* four to five inches long, sessile, very coriaceous, oblanceolate, acute or subacute, deeply grooved down the middle in front, obtusely keeled down the back, pale green, nerves obscure; basal sheaths two or three, half an inch long, tubular, truncate, with an acute apex on one side. *Scape* as long as the leaf, pendulous, slender, one-flowered, very dark green, with five or six green appressed tubular sheaths separated by spaces as long as themselves; bract linear-oblong, greenish, streaked with purple. *Flowers* two to two and a half inches broad across the sepals, vertical with the lip uppermost. *Sepals* spreading horizontally, green spotted and sprinkled with dark purple, all broadly ovate, suddenly contracted into filiform tails as long as the limb; dorsal nearly free rather the longest and narrowest with the tip of the tail straight, lateral connate to beyond the middle, and with the tails incurved or involute at the tip. *Petals* very small, adnate to the base of the column and parallel to it, but shorter, consisting of a golden yellow two-edged column terminated by a dilated thickened dark-purple shining hood. *Lip* jointed on the short foot of the column, rose-red; claw sigmoid, deeply grooved, with two lamellæ in the groove; limb much shorter than the sepals, reniform, concave, with incurved entire margins, disk with many radiating forked bright-red raised nerves. *Column* incurved, margins above slightly dilated but hardly winged.—*J. D. H.*

Fig. 1, Top of ovary, petals, lip and column; 2, petals, foot of column and column; 3, lip; 4, column; 5, anther; 6, pollen-masses:—*all enlarged.*



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Tab. 6978.

AMORPHOPHALLUS virosus.

Native of Siam.

Nat. Ord. Aroideæ.—Tribe Pythonieæ.

Genus Amorphophallus, *Blume*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 970.)

Amorphophallus (Candarum) *virosus*; folii lamina trisecta, segmentis dichotomis pinnatifidis v. 2-pinnatifidis, pinnulis valde inæqualibus majoribus oblongis cuspidatis minoribus triangulari-ovatis, petiolo aspero maculato, pedunculo brevi crasso, spatha ampla late infundibulari superne expansa marginibus undulatis extus viridi purpureo suffuso et maculis magnis pallidis consperso, intus luride purpureo, inflorescentia masculo femineo subæquilonga, appendice brevi crasso conoideo atropurpureo, antheris sessilibus, ovariis globosis, stylo valido elongato stigmate subreniforme.

A. virosus, *N. E. Brown in Gard. Chron.* 1885, vol. xxiii. p. 759.]

The Indian and Indo-Malayan species of the *Candarum* section of *Amorphophallus* have yet to be studied with a view of defining the species, if indeed there is more than one. The figures of the type of the section, *A. campanulatus*, Blume, the *Arum campanulatum* of Roxburgh, differ greatly from one another; and the earliest of them, that of Rumphius, is useless for purposes of identification. Nor is the figure of Roxburgh, in his Coromandel plants, much better, whilst that in this Magazine (t. 2812) is very unlike all the rest. The magnificent plate in Blume's "Rumphia" (t. 32, 33), drawn from Javanese individuals, leaves nothing to be desired, and answers to my recollection of the Bengal plant. It differs from that here figured in the narrower leaflets, and the absence of the large pale spots on the spathe, as also in the enormous size of the spathe, which latter, however, is not a character of any importance. The figure that approaches nearest to *A. virosus* is that of *Arum Rumphii* of Gaudichaud (Botany of Freycinet's Voyage, p. 127, t. 34), to which that author refers *Arum campanulatum*, Roxb., as a synonym, for it has the large white spots on the spathe. It was found in Timor, and it is upon a Timor plant that Blume founded the genus *Amorphophallus*, supposing it to be the same with Roxburgh's *Arum cam-*

panulatum, of which latter he figures and describes a Javanese specimen. Should this identification of the Timor with the Indian plant prove to be incorrect, the former plant (and *A. virosus* if cospecific) will have to take the name of *A. Rumphii*. Schott, indeed, in his Meletemata (under Reichenbach's genus of *Candarum*, which he retained in that work as a genus) makes three species out of *Arum campanulatum*, Roxb., namely, *C. Roxburghii* for the plant of that author, *C. Rumphii* for that figured by Gaudichaud, and *C. Hookeri* for the one figured at t. 2812 of this work. In Schott's latest work, however, his "Prodromus Systematis Aroidearum" (p. 130), these are passed over in silence, and presumably reduced to *A. campanulatus*, Blume, to which is added *A. dubius*, Blume (see Tab. 5187 of this work); and in this he is followed by Engler in his Monograph of Araceæ (p. 309). Whether *A. dubius*, a native of the Peninsula of India and of Ceylon, will prove distinct is doubtful, for I am informed by Mr. Clarke that *A. campanulatus* assumes in the dry weather a very diminutive form; and there is nothing in its male or female flowers or spathe by which it can be distinguished. It remains to add that a very wide geographical distribution is assigned by Blume and Engler to *A. campanulatus*, namely, from Bengal to Ceylon in India, the Malay Islands to Timor and New Guinea, the Pacific Islands of Tahiti and the Fijis, and lastly Madagascar.

The specimen here figured of *A. virosus* flowered in the Royal Gardens in June of last year, and was as fetid as is usual with its allies. It is supposed to have been brought from Siam. The height of the petiole was 4 feet and $3\frac{1}{2}$ inches in diameter; the spread of the blade 6 feet.—*J. D. H.*

Fig. 1, Reduced view of the whole plant; 2, petiole; 3, portion of leaf; 4, inflorescence; 5, portion of inner surface of spathe; 6, male flowers; 7, fem. flowers; 8, vertical section of ovary; 9, ovules:—*all but figs.* 1, 2, 3, *and* 4 *greatly enlarged.*

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Tab. 6979.

CŒLOGYNE Massangeana.

Native of Assam.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Cœlogyne, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 518.)

Cœlogyne (Eucœlogyne) *Massangeana*; pseudobulbo obpyriforme, foliis petiolatis elliptico-lanceolatis acuminatis subplicato-nervosis in petiolum teretiusculum attenuatis, pedunculo basi pseudobulbi orto robusto, racemo pedali pendulo laxe plurifloro, bracteis spathaceis coriaceis cymbiformibus brunneis, floribus pallide ochraceo-citrinis, sepalis lineari-oblongis obtusis, petalis sepalis æquilongis sed angustioribus ellipticis v. oblanceolatis acutis, labello sepalis æquilongo basi haud saccato, lobis lateralibus elongato oblongis obtusis incurvis intus brunneo striatis, disco inter lobos 3-cristato et 3-carinato, lobo terminali parvo suborbiculari disco late tumido tuberculato, columna pallida auguste alata, vertice crenulato.

C. Massangeana, *Reichb. in Gard. Chron.* x. (1878), p. 684, and vol. xvii. (1882) p. 369; *Floral Magazine* N.S. t. 373; *Warner and Williams Orchid Album*, t. 29.

Reichenbach, the author of this as of so many other species, rightly indicates its affinities to be with Lindley's *C. asperata*, a native of Borneo, with a many-flowered dense subpubescent raceme, and indeed the two seem to be very nearly allied, for they agree in the colour and form of the sepals, in the tip being "richly marked with brownish-yellow veins springing from a rugged bright-orange central ridge," and in the drooping raceme a foot long of large flowers. There is, however, in *C. Massangeana* no trace of pubescence on the raceme, and the midlobe of its lip could not be called oblong.

C. Massangeana was described by Reichenbach in 1878 from specimens that flowered in the Château de Baillonville, près Marche, the residence of M. de Massange, an enthusiastic orchidophilist, and was procured from Messrs. Jacob Makoy and Co.; no locality for the plant, however, is given. It is reported to be a native of Assam, but I should not be surprised if it proved to be Malayan. The specimen here figured was presented by Messrs. Veitch and Sons, and flowered in the Royal Gardens in October of last year.

Feb. 1st, 1888.

Descr. *Pseudobulb* obpyriform, smooth. *Leaves* four to six inches long, elliptic-lanceolate, acuminate, thin, subplicately nerved; nerves strong beneath, narrowed at the base; petiole one and a half to two inches long, stout, terete, green. *Raceme* one to two feet long, springing from the base of the pseudobulb and there sheathed by short imbricate spathes, laxly many-flowered; bracts half an inch long, hard, smooth, cymbiform, red-brown, embracing the pedicels. *Flowers* two inches in diameter, pale, rather dingy ochreous or citrinous yellow. *Sepals* linear-oblong, obtuse. *Petals* as long but narrower, oblanceolate or elliptic-lanceolate, acute. *Lip* nearly as long as the sepals, not at all saccate; lateral lobes elongate-oblong, obtuse, incurved, externally leaden-grey with purple tips, internally beautifully longitudinally striped with maroon-brown and yellow; disk between the lateral lobes with six rows of keels or crests, of which the outer and mesial bear tubercles with flattened crowns; midlobe small, suborbicular, notched at the tip with a mesial tooth, disk covered with a broad two-lobed tumid rugged or toothed yellow and brown crest or boss confluent with the ridges between the side-lobes, and leaving a narrow yellow membranous border to the lobe. *Column* rather slender, narrowly winged, top round and crenulate.—*J. D. H.*

Fig. 1, Lip; 2, column; 3, anther; 4, pollinia:—*all enlarged.*

Tab. 6980.

SALVIA scapiformis.

Native of Formosa.

Nat. Ord. Labiatæ.—Tribe Monardeæ.

Genus Salvia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1194.)

Salvia (Notosphace) *scapiformis;* glaberrima, caule gracili, foliis subradicalibus longe petiolatis late ovato- v. oblongo-cordatis crenatis apice rotundatis olivaceis subtus purpurascentibus, scapis nudis v. rarius 2-foliatis ad basin fere floriferis, racemis ramosis elongatis gracilibus, verticillastris laxis 5-floris, calyce tomentello, labio superiore rotundato integerrimo, inferiore breviter 2-dentato, corollæ azureo-lilacinæ tubo calyce longiore, labio superiore erecto 2-lobo, inferiore 3-lobo lobis lateralibus oblongis obtusis, medio 2-lobo lobis divaricatis truncatis crenatis.

S. scapiformis, *Hance in Lond. Journ. Bot.* vol. xxiii. (1885) p. 368.

The late Dr. Hance, the author of this Sage, rightly describes it as being well worthy of cultivation as an ornamental plant; for which purpose the profuseness of its flowering racemes, the delicate clear colour of the amethystine blue flowers, and graceful habit recommend it. As a species it is closely allied to the Indian *S. saxicola*, Wall., a common plant in the Khasian Mountains of Eastern Bengal,* where many Chinese plants, and plants closely allied to Chinese, not found further eastward in India, have been discovered. *S. scapiformis* differs from *S. saxicola* in being perfectly glabrous, in the almost total absence of bracts, in the shorter lower lip of the calyx, and in the larger corolla with longer lobes.

Salvia cepiformis was discovered by Mr. C. Ford, Superintendent of the Hong Kong Botanical Gardens, in the Island of Formosa; and specimens sent by him to the late Dr. Hance (H.B.M. Vice-Consul, Whampoa) form the subject of one of the last published contributions made to Botany by that lamented gentleman. Mr. Ford also sent living

* Wallich in his Catalogue gives Nepal as the native country of this species, but Mr. Clarke, in the "Flora of British India," probably discrediting Wallich's locality, confines it to the Khasia Mountains, where I have gathered it abundantly. It may, however, very well occur in both countries.

Feb. 1st, 1888.

plants to the Royal Gardens, Kew, which flowered, in the Cape House, in June of last year, and which supplied the material for the accompanying plate. It sends up a profusion of slender leafless flowering scapes, that are simple or branched from the base, and continue flowering for two months.

Descr. *Leaves* all radical, with rarely an opposite pair towards the base of one or more of the scapes, two inches long, spreading, broadly ovate- or oblong-cordate, obtuse, coarsely irregularly crenate or lobulate, convex and dark green above, with few sunk nerves and convex surfaces between them, red-purple beneath, with prominent nerves; petiole as long as the blade, or shorter. *Scapes* six to ten inches high, ascending, with usually a pair of long subbasal branches, angular, greenish red; whorls very numerous, rather remote, five-flowered, or the uppermost three-flowered; bracts none, or minute, subulate; pedicels shorter than the calyx. *Calyx* shortly oblong, one-sixth of an inch long, five-ribbed, obscurely puberulous and glandular; upper lip short, recurved, entire; lower rather longer, with two short sharp ovate teeth. *Corolla* pale amethystine blue; tube hardly longer than the calyx, with a villous ring within; limb about one-third of an inch in diameter; upper lip obtusely bifid, lower three-lobed, lateral lobes shortly oblong, obtuse; midlobe longer, bifid; lobules divergent, truncate and crenate. *Stamens* deflexed on the lower lip of the corolla; connective much longer than the filaments, straight or nearly so, the antheriferous arm three times as long as the other which is subacute; anther-cell very small, oblong. *Ovary* glabrous; style-arms slender.—*J. D. H.*

Fig. 1, Bud; 2, flower; 3, portion of tube of corolla laid open and stamens; 4, anther-cell; 5, ovary and disk:—*all enlarged.*

M.S. del. J.N. Fitch. lith.

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Tab. 6981.

ALOE Hildebrandtii.

Native of East Tropical Africa.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Aloe, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 776.)

Aloe *Hildebrandtii*; caudice erecto elongato simplici, foliis lanceolatis dissitis patulis parce maculatis dentibus marginalibus parvis deltoideis, floribus in paniculam amplam pedunculo brevi ancipiti ramis multis ascendentibus laxe racemosis dispositis, pedicellis brevibus, bracteis parvis lanceolatis, perianthii segmentis lineari-oblongis tubo cylindrico vix longioribus, genitalibus breviter exsertis.

This very distinct new Aloe was discovered by the late Dr. Hildebrandt in the course of those adventurous explorations of East Tropical Africa * which extended from 1872 to 1877, and added very materially to our knowledge of the botany of that part of the world. For horticultural purposes it is one of the most desirable of all the Aloes, from its compact growth and the unprecedented abundance of its bright-coloured flowers. Its nearest allies are *A. consobrina*, Salmdyck, and the little-known *A. spicata*, Haworth, of the latter of which there is a good figure in Bentley and Trimen's "Medicinal Plants," tab. 284. Dr. Hildebrandt's explorations extended from Abyssinia and Somali-land southward to the mountains of the interior opposite Zanzibar, and we do not know the exact country whence it came. Our drawing was made from a plant that flowered at Kew for the first time last summer, which was received in 1882 from the Botanic Garden of Berlin in 1882.

Descr. Leafy stem simple, terete, erect, reaching a length of one and a half or two feet, and a diameter of half or three-quarters of an inch in our plant; internodes half or three-quarters of an inch long, conspicuously spotted with white. *Leaves* laxly disposed, spreading, lanceolate, six to ten inches long, one and a half or two inches broad at the

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* For a detailed account of Dr. Hildebrandt's explorations reference may be made to a translation by Mr. Geo. Murray of a paper by Herr Kurtz, in Trimen's "Journal of Botany" for 1879, p. 86.

clasping base, tapering gradually to an acuminate point, concave on the face above the base, rounded on the back, glaucous green with a few small white spots, margined with small, ascending, deltoid teeth. *Peduncles* produced from the axils of the upper leaves, short, compressed, acutely angled. *Inflorescence* a lax panicle a foot and a half long, composed of ten or twelve laxly racemose ascending branches; pedicels about a quarter of an inch long; bracts small, lanceolate. *Perianth* cylindrical, under an inch long; segments linear-oblong, scarcely longer than the tube; tube and outer segments bright red; inner red-yellow, with a green keel. *Stamens* and *style* a little longer than the perianth; anthers small, oblong, yellow.—*J. G. Baker.*

Fig. 1, Whole plant, *much reduced*: 2, a leaf; 3, upper branches of the panicle, *both life-size*; 4, front view of stamen; 5, back view of stamen; 6, pistil, *all three enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks Day & Son Imp.

Tab. 6982.

ONCIDIUM Jonesianum.

Native of Paraguay.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Oncidium, *Swartz;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 562.)

Oncidium (Teretifolia) *Jonesianum;* folio in pseudobulbo parvo solitario teret carnoso sensim acuminato uni-sulcato, racemo e pedunculo pendulo adscendente, pedunculo rachique rubro-purpureo, floribus amplis, sepalis petalisque subæqualibus subunguiculatis oblongis obtusis undulatis pallide viridibus rubro-purpureo maculatis, labelli lobis lateralibus parvis oblongo-rotundatis, aurantiacis, disco inter lobos incrassato cristato, terminali amplo subunguiculato latiore quam longo, transversim oblongo marginibus crispatis albo basi sanguineo maculato, disco nudo, columnæ alis auriculætormibus oblique ovatis ascendentibus.

Reichb. f. in Gard. Chron. vol. xx. (1881) p. 781; *Warner and Williams Orchid Album*, t. 183; *Lindenia*, t. 82; *Reichenbachia*, p. 47, t. 21.

This is by far the handsomest species of the small group of the genus *Oncidium* (containing about half-a-dozen species) to which it belongs, and of which the type may be considered to be the long-known *O. Cebolleta*, Swartz, of the Spanish Main. *O. Cebolleta* is figured by Lindley in the Botanical Register (Tab. 1994), and is supposed to be the *Epidendron Cebolleta* of Jacquin's "Selectarum Stirpium Americanarum Historia," t. 131, f. 2, published in 1763; though, as Dr. Lindley remarks, the fact of Jacquin's not having figured or described flower or fruit of his *O. Cebolleta* renders the identification doubtful. *O. Jonesianum* is a much larger-flowered species than *O. Cebolleta*, which has an erect branched glutinous panicle of yellow flowers. Of the other species of the group, only one has been figured, the *O. stipitatum* of Lindley, from Panama, to which that author refers his subsequently published *O. lacerum* (Bot. Reg. 1846, t. 27), also a paniculate yellow-flowered species; this latter and the Mexican *O. longifolium* (reduced subsequently to a variety of *O. Cebolleta*) he regarded as the handsomest species of the genus. From all these, and probably from all typical

species of the group, *Jonesianum* differs in the simple raceme, which ascends from the pendulous peduncle, in the great size and colouring of the flower, and in the broad white undivided midlobe of the lip. There is, however, another and more dissimilar departure from the above type in the *O. superfluum* of Reichenbach, which is singular in its cylindric pseudobulbs, short raceme, arched dorsal sepal, and its beaked (proboscoid) anther. This last and *O. Jonesianum* are outlying species, the former inhabiting Minas Geras in Brazil, and our plant Paraguay, both far beyond the geographical limits of the other species of the group.

O. Jonesianum was introduced by Messrs. Fred. Horsman and Co., of Stockwell Street; and bears the name of Mr. Morgan Jones, an enthusiastic lover of orchids. It is, however, stated in "Lindenia" that it had been previously brought to England by a travelling collector, Louis de St. Leger, and sold at Steven's auction rooms as *O. Ceboletta*. Sanders, in his splendid work, "Reichenbachia," states that specimens brought by M. St. Leger in 1883 flowered in England four or five years ago. In the same work Reichenbach describes and figures a remarkable variety (*phaanthum*) with red-brown unspotted sepals and petals, and a smaller callus on the lip. Our specimen flowered in the intermediate Orchid house of the Royal Gardens towards the end of September last.—*J. D. H.*

Fig. 1, Section of leaf; 2, ovary, column and base of lip; 3, side view of column with its wings removed; 4, anthers; 5, pollinia:—*all enlarged*.

Tab. 6983.

VANDA Sanderiana.

Native of the Philippine Islands.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Vanda, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 578.)

Vanda *Sanderiana;* caulibus breviusculis dense foliosis, foliis basi dense imbricatis falcato-recurvis rigide carnosis loriformibus apice truncatis et subtricuspidatis, racemo brevi dense multifloro, floribus maximis, sepalis orbiculatis sessilibus dorsali petalisque pallide lilacinis, lateralibus aureis nervis 7–9 ochraceo-sanguineis clathratim connexis, petalis sepalis minoribus late rhombeo-obovatis, labello parvo rubro-brunneo basi concavo, lobis lateralibus parvis rotundatis incurvis, terminali subquadrato recurvo latiore quam longo basi semilunari, marginibus arcuatis erosis, apice rotundato, disco carinis 3 crassis sulcatis percurso, polliniis globosis stipiti elongato plano lineari affixis, glandula crassiuscula disciformi, ovarii carinis subalatis undulatis.

V. Sanderiana, *Reichb. f. in Gard. Chron.* vol. xvii. (1882), p. 588, and vol. xx. (1883), p. 440, f. 67, 68; *Illust. Hortic.* vol. xix. (1872), p. 272, and vol. xxxi. p. 139, t. 532; *Rev. Hortic.* 1885, 372, *cum Ic. Warner's Orchid. Album,* t. 124; *Lindenia,* vol. i. p. 85, t. 40 (*var. labello viridi*).

Esmeralda Sanderiana, *Reichb. f.* (*sub* V. Sanderiana), *in Gard. Chron. l. c.* 588.

Of more than a dozen species of *Vanda* figured in this work, there is not one with which this superb plant here figured can claim any close affinity, except perhaps with *V. Cathcartii* (Tab. 5845), now referred to another genus by Reichenbach, *Esmeralda* (Xen. Orchid. ii. 38). Both these have very broad flat sepals and petals, both want the spur at the base of lip so almost constant a feature in *Vanda* proper, and there is in both transverse coloration of the perianth. They differ, however, remarkably in their leaves, those of *V. Cathcartii* being soft, almost flaccid, with rounded unequally 2-lobed tips, whilst those of *V. Sanderiana* are hard, rigid, with the truncate cuspidate tips so usual in typical *Vanda*. Bentham (in Gen. Plant. iii. 573) has referred *V.* (*Esmeralda*) *Cathcartii* to Blume's genus *Arachnanthe*, which differs from *Vanda* in the lip being jointed on to the base of the column, and neither saccate nor spurred at the base, though sometimes shortly spurred or gibbous at the back of the middle lobe. The insertion of the lip appears to me to be the same in *V.*

Cathcartii and *V. Sanderiana*, and in habit neither resembles either the original *Arachnanthe* of Blume (*A. moschifera*, Blume, Rumph. iv. 55, t. 196 and 199 D. *Renanthera Flos aeris*, Reichb. f.) or *P. Lowii*, Lindl. (*Renanthera Lowei*, Reichb. f. *Tab. nost.* 5745), which latter Reichenbach associates with *A. moschifera*, Bl., referring both to a section of *Renanthera*. Upon the whole I should be disposed to leave the Arachnanthes where Reichenbach has kept them, under *Renanthera*, and to bring *V. Cathcartii* and *Sanderiana* together under *Esmeralda* either as a section of *Vanda* or a distinct genus. Reichenbach himself appears at one time to have regarded *P. Sanderiana* as an *Esmeralda*, for he cites *Esmeralda Sanderiana*, Reichb. f., under his description of it in Gard. Chron. N. S. xvii. 588, as a synonym.

P. Sanderiana is a native of the Island of Mindanao, one of the Philippines, whence it was imported by Mr. F. Sander. I am indebted to W. C. Lee, Esq., of Downside, Leatherhead, for the beautiful specimen here figured, which flowered in his famous collection in October last. The species is a remarkably free flowerer; single plants are described as producing five spikes at a time, and these spikes as bearing forty-seven flowers and buds, thirty-four being open simultaneously.—*J. D. H.*

Fig. 1, Side view of ovary, lip and column; 2, front view of lip and column; 3, anther; 4 and 5, pollinia:—*all enlarged.*

M. S. del, C H Fitch. lith

Vincent Brooks Day & Son Imp.

Tab. 6984.

PRIMULA geraniifolia.

Native of the Eastern Himalaya.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 631.)

Primula *geraniifolia*; acaulis, molliter hirsuta, efarinosa, foliis longe petiolatis rotundato-cordatis ambitu acute v. obtuse lobulatis, lobulis crenato-dentatis, scapo gracillimo, floribus umbellatis verticillatisve patentibus, bracteis linearibus pedicellis brevioribus, calycis subcampanulati 5-fidi lobis erectis ovatis acutis, corollæ tubo brevi subinflato, ore annulato, lobis breviusculis obcordatis patentibus, ovario globoso.

P. geraniifolia, *Hook. f. Fl. Brit. Ind.* vol. iii. p. 484.

This is a near ally of the *P. mollis* figured at Tab. 4798 of this work, and, like it, is a native of the Eastern Himalaya, its congener being found in the neighbouring province of Bhotan. Both belong to a group of the genus of which the *P. cortusioides* (Tab. 399) of Siberia is the long-known type. There are, however, remarkable differences in the corollas of *P. geraniifolia*, *mollis* and *cortusioides*, inasmuch as the divisions of the corolla-lobes of the first named are short and rounded with a broad sinus, those of *mollis* are narrower with an acute narrow sinus, and of *cortusioides* are divaricate with a broad acute sinus. The calyx is very similar in all three, but the corolla-tube of *mollis* is much the longest of the three. *P. sinensis*, which is usually referred to the same group, differs remarkably in the inflated base of the calyx. The lobing of the leaf of *P. geraniifolia* varies very much in the original specimens for which the description in the Flora of British India was drawn up. They are longer than in the specimen here figured, and quite acute.

P. geraniifolia is a native of the (politically) Tibetan province of Chumbi, which forms a wedge, with its narrow end to the south, between Sikkim on the west and Bhotan on the east. In other words, it is a triangular section of the Himalaya, extending southward from Tibet proper to about half-way between the valleys of the Burrampooter

and the crests of the range. Being bounded on the east and west by lofty spurs from the great mass to the north of it, which spurs close it in to the south, and leave it open to the north, it possesses a climate intermediate between the rainy one of the Himalaya and the dry one of Tibet, and contains some peculiar plants. It has never been visited by a botanist, and for a knowledge of its vegetation we are indebted to native collectors sent by Dr. King. Its elevation is probably everywhere above 10,000 feet, except along the narrow gorges of the Machoo river and its tributaries, which has its source in the snows of the great snowy mass of Chumalari. Our specimen was raised from seed sent by Dr. King, and flowered in May of last year, and has proved to be quite hardy at Kew.

DESCR. *Rootstock* short. *Leaves* spreading, long-petioled, one to one and a half inches in diameter, hirsute on both surfaces, orbicular and deeply cordate, pale yellow-green, membranous, eleven- to fourteen-lobulate; lobules acute obtuse or rounded, crenate or toothed; nerves deeply sunk; basal lobes ear-shaped, enclosing a rounded sinus; petiole two to three inches long, slender, hirsute. *Scape* erect, very tall and slender, six to ten inches long, softly hairy. *Flowers* many in a solitary terminal umbel, with sometimes a whorl below the umbel, spreading and drooping; bracts few, unequal, slender, green, shorter than the pedicels. *Calyx* subcampanulate, pubescent, cleft to the middle into five erect ovate acute lobes. *Corolla* pale purple, glabrous, tube a little longer than the calyx, rather inflated and contracted at the yellow annulate mouth; limb two-thirds of an inch in diameter; segments short, obcordate, with rounded lobules. *Stamens* inserted just beneath the mouth. *Ovary* globose, stigma capitate.—*J. D. H.*

Fig. 1, Calyx; 2, corolla laid open; 3, ovary:—*all enlarged.*

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Tab. 6985.

MESEMBRYANTHEMUM Brownii.

Native of South Africa.

Nat. Ord. Ficoideæ.—Tribe Mesembryeæ.

Genus Mesembryanthemum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 853.)

Mesembryanthemum *Brownii*; fructiculus compactus, erectus, ramosus, glaberrimus, ramis gracilibus, foliis semipollicaribus teretiusculis acutis subpustulatis pallide glauco-viridibus basi lata insertis, floribus ternis solitariisve 1 poll. latis læte purpureis, demum ochraceis, calycis tubo brevi turbinato, lobis 2 multo majoribus subdolabriformibus dorso cornutis ceteris ovatis obtusis mucronatis, petalis pluriseriatis anguste spathulato-oblanceolatis apice retusis v. obtuse 2-dentatis, staminibus collectis, stigmatibus 5 crassis apicibus subulatis.

According to the arrangement into groups of the species of this vast genus by Pr. Salm Dyck, and as adopted in the Flora Capensis of Harvey and Sonders, this beautiful species is technically referable to the *Tenuifloræ* along with *M. coccineum*, Haw. (*M. bicolorum*, Tab. 59, of this work); but, as Mr. N. E. Brown points out to me, its nearest affinity is with *M. polyanthon*, Haw., which is referred in the above work to the group *Scabra*, defined as having scabrous leaves. To add to this confusion, the group *scabra*, which in De Candolle's Prodromus is placed in the great primary division of the genus with epapulose leaves, is in Salm Dyck's work and in Harvey and Sonders, placed in the papulose division. Now the plant named *polyanthon* in the Kew collection has neither papulose nor scabrid leaves (nor are they so described and figured by Salm Dyck), in both which respects *M. Brownii* agrees with it, as it further does in the broad obtuse petals, whereas in all the species of the *tenuiflora* group the petals are slender and acuminate. With regard to scabridity of foliage, Mr. Brown, who has made a study of the genus, assures me that the term scabrid is used in it in a very loose sense, often applying merely to the roughness of leaf-surface produced by drying. These facts suggest the necessity of finding some more scientific classification of the species of this interesting genus than that hitherto adopted.

March 1st, 1888.

I have named this beautiful species after Mr. Brown, who has taken a great deal of trouble in the determination of the species of this troublesome genus. Mr. Watson, who is charged with the cultivation of the succulent plants at Kew, informs me that the flowers expand only in bright sunlight, and that the change of colour shown in the specimen figured is not accidental, but that the young flowers are invariably of a brilliant lustrous purple, and that they fade into ochreous or reddish yellow.

M. Brownii has been long grown at Kew under the name of *micans*; it flowers in July, and remains long in blossom. How far it may prove distinct specifically from *M. polyanthon*, I am not prepared to say; it differs from Haworth's and other descriptions of that plant in the total absence of scabridity, and from Salm Dyck's figure of it in the erect more shrubby habit and smaller flowers.

Descr. A small erect much-branched shrub, about a foot high; branches slender, quite glabrous, not articulate at the nodes, covered with brown smooth shining bark. *Leaves* one-half to two-thirds of an inch long, in scattered pairs, or crowded on short lateral branches, terete, acute, fleshy, inserted by a broad base, pale glaucous green, not papillose, but obscurely pustulate with translucent slight prominences, giving an uneven appearance, more pronounced as the leaf dries; youngest leaves obscurely triquetrous or semi-terete. *Flowers* one to one and a quarter inches in diameter, solitary, or in threes at the ends of the branches, where each pedicel has a pair of leaves like the cauline, from deep ochreous red to bright red-purple; pedicels one-half to one inch, slender, hardly swollen below the calyx. *Calyx-tube* short, turbinate; lobes longer than the tube, two larger broader upwards, each produced into two rounded lobes with a short dorsal space between them; three smaller lobes ovate, obtuse, mucronate. *Petals* in several series, spreading from the base, straight, gradually dilated upwards, very narrowly spathulate, tip obtuse retuse or notched, often obliquely. *Stamens* shorter than the calyx, densely crowded. *Stigmas* five, subulate, from a very broad tumid base.—*J. D. H.*

Fig. 1, Leaf; 2, calyx and stamens; 3, petals; 4 and 5, stamens; 6, ovary with the sepals removed, and stigmas:—*all enlarged.*

M. S. del, C. H. Fitch Lith.

Vincent Brooks, Day & Son Imp.

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Tab. 6986.

HELONIOPSIS japonica.

Native of Japan and Corea.

Nat. Ord. Liliaceæ.—Tribe Narthecieæ.

Genus Heloniopsis, *A. Gray; (Benth. et Hook. f. Gen. Pl.* vol. iii. p. 827.)

Heloniopsis *japonica;* rhizomate crasso præmorso, foliis rosulatis oblanceolatis sessilibus firmulis patulis, pedunculo foliis paucis valde reductis prædito, floribus 2–10 racemosis vel subumbellatis, pedicellis brevibus cernuis, bracteis parvis lanceolatis, perianthio campanulato segmentis oblanceolatis, staminibus perianthio æquilongis vel paulo longioribus, stylo staminibus longiori, seminibus utrinque caudatis.

H. japonica, *Maxim. in Bull. Acad. Petrop.* vol. vi. p. 211; *Franch. et Savat. Enum. Jap.* vol. ii. p. 87; *Baker in Journ. Linn. Soc.* vol. xvii. p. 460.

Scilla japonica, *Thunb. Fl. Jap.* p. 137; *Icon. Dec.* iv. t. 4; *Kunth Enum.* vol. iv. p. 330.

Sugerokia japonica, *Miquel in Ann. Mus. Lug. Bat.* vol. iii. p. 345.

This interesting plant has long been known to botanists, but the genus is now brought for the first time into cultivation. It is spread widely in the mountains of Japan, its altitudinal range, according to Mr. Maries, being from two thousand to seven thousand feet above sea-level. It has lately been discovered in Corea by Mr. W. R. Carles, and it is very likely that the Formosan *H. umbellata*, Baker, will prove to be only a geographical variety of the same species. It has the general habit of a large-flowered *Scilla*, to which genus it was originally referred by Thunberg, but the rootstock is not a bulb, the leaves are persistent and not fleshy in texture, and the small seeds are conspicuously tailed at each end, like those of a *Narthecium* or *Pitcairnia*. It appears to be perfectly hardy in England. It was brought home by Mr. Maries, and first flowered by Messrs. Veitch in the spring of 1881. Our drawing was made from a plant presented by Messrs. Veitch that flowered in the herbaceous pits at Kew in April, 1887.

Descr. *Rootstock* short, stout, præmorse, bearing numerous long cylindrical root-fibres. *Leaves* many in a basal

rosette, sessile, oblanceolate, spreading, persistent, glabrous, moderately firm in texture, green tinged with purple. *Peduncle* as long as or longer than the leaves, bearing a few small adpressed rudimentary leaves. *Flowers* two to ten in a raceme, which is sometimes congested into a corymb or an umbel; pedicels cernuous, about as long as the flowers; bracts small, lanceolate. *Perianth* campanulate, reddish, half an inch long; segments oblanceolate, free to the base, spreading in the upper half when fully expanded. *Stamens* as long as or a little longer than the perianth-segments; filaments cylindrical; anthers oblong, versatile. *Ovary* globose; ovules many in a cell; style overtopping the anthers; stigma capitate. *Capsule* coriaceous, shorter than the persistent perianth-segments, split down to the base. *Seeds* small, very numerous, conspicuously tailed at both ends.—*J. G. Baker.*

Fig. 1, Vertical section of a flower; 2, front view of a stamen; 3, back view of a stamen; 4, entire pistil; 5, horizontal section of ovary:—*all more or less enlarged.*

M.S. del., J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

Tab. 6987.

ONOSMA PYRAMIDALIS.

Native of the Western Himalaya.

Nat. Ord. Boragineæ.—Tribe Borageæ.

Genus Onosma, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 864.)

Onosma *pyramidalis;* tota hispide hirsuta, foliis radicalibus numerosissimis rosulatis anguste lineari-lanceolatis acuminatis uninerviis, caule florente robusto ascendente pyramidatim ramoso foliaceo-bracteato bracteis ad basin ramorum sessilibus lanceolatis 3-nerviis, ramis apices versus nutantes floriferis, floribus confertis pedicellatis pendulis, bracteis floriferis linearibus calyci subæquilongis, sepalis anguste lanceolatis acuminatis demum patentibus, corolla ellipsoidea ventricosa calyci subæquilonga tereti puberula coccinea basi intus annulo piloso instructa, ore contracto, dentibus minutis late triangularibus recurvis, squamis subquadratis truncatis barbatis, filamentis basin fere corollæ insertis filiformibus, antheris elongatis puberulis basi breviter 2-fidis et cohærentibus, connectivo in appendicem breviusculam linearem truncatam producto, stigmate integerrimo.

This fine plant, if not the type of a distinct genus, must stand by itself in the genus *Onosma*, from the other species of which it differs in the stamens inserted almost at the very base of the corolla, and in the minute entire stigma. The fruit is unfortunately unknown, but the nucules of the advanced ovary appear in no way to differ from those of an *Onosma*; and there is no appearance of the sepals enlarging after flowering. From all the previously described Indian species *O. pyramidalis* differs in its size and pyramidally branched leafy habit, in the calyx cleft to the base into very narrow segments and with no tube at all, and the characters given above. It most closely resembles the *O. bicolor*, Benth., which has a similarly formed corolla, but is a very slender species, in which the cauline leaves are narrowed into a petioled base and the stamens inserted by very short filaments half-way up the corolla-tube. It is a very handsome plant, conspicuous for the bright scarlet of the flowers, which turn of a mauve purple as they wither.

Seed of *O. pyramidalis* were brought in 1885 by J. F. Duthie, Esq., F.L.S., Superintendent of the Government

Botanical Gardens, Saharunpore, Upper India, who has also sent to Kew Herbarium specimens from rocks in the Kali valley, Kumaon, at an elevation of 8–9000 feet. The plant flowered at Kew in October, 1886; it is not hardy, and it ripened no fruit.

Descr. Whole plant hispidly hirsute with white hairs, those on the upper surface of the leaves arising from rough tubercles. *Radical leaves* very numerous, rosulate, ten to twelve inches long, spreading, narrowly lanceolate, nearly an inch broad, acuminate, one-nerved, narrowed towards the base, bright green. *Flowering stem* eighteen inches to two feet high, very stout, terete, pyramidally branched from the ascending base, leafy; leaves or bracts at the bases of the branches four to six inches long, sessile, lanceolate, acuminate, three-nerved, longer than the branches, which are erecto-patent with nodding short racemes of crowded flowers at their tips; floral bracts ovate-lanceolate, about as long as the pedicels. *Flowers* drooping, pedicels as long as or shorter than the calyx. *Sepals* half an inch long, narrowly lanceolate, green, free to the base. *Corolla* about as long as the sepals, nearly ellipsoid, with a rather contracted truncate mouth, quite terete and sparingly pubescent, bright scarlet fading to lilac; lobes minute, very broad, recurved; basal scales opposite the filaments, obovate, truncate, concave in front, bearded. *Stamens* inserted close to the base of the corolla-tube, above a basal ring of short hairs, included; filaments filiform, not dilated below; anthers elongate, very shortly two-fid at the base with short truncate lobes; cells linear, puberulous, as is the linear truncate prolongation of the connective, which is half the length of the cells. *Ovary* of four-rounded lobes; style filiform, stigma quite simple. *Nucules* erect, ovoid, acute, hardly beaked, quite smooth.—*J. D. H.*

Fig. 1, Flowers; 2, portion of base of corolla, scale and stamen; 3, ovary and disk; 4, nucules:—*all enlarged.*

M.S. del. J.N. Fitch lith.

L. Reeve & Co. London

Tab. 6988.

NYMPHÆA (hybrida) KEWENSIS.

Garden Hybrid.

Nat. Ord. Nymphæaceæ.—Tribe Nymphææ.

Genus Nymphæa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 46.)

Nymphæa *kewensis*, Hort. (hybrida inter *N. Lotus*, var. *alba*, fem., et *N. devoniensis*, mas.).

N. kewensis, *Gard. Chron.* 1887, vol. ii. p. 366.

The Botanical Magazine has very rarely indeed devoted a plate to a Garden Hybrid. This is from no want of appreciation of the interest of such productions in a scientific point of view, and still less from a failing to admire so many of these as beautiful and valuable contributions to the resources of horticulture. The reason is that there has always been a wealth of plants of greater interest in a botanical point of view claiming admission to its pages. In the present case, *Nymphæa kewensis* makes a special appeal to the indulgence of the Magazine, founded on the facts of its being a child of the Institution that has contributed so overwhelming a number of plants to its volumes, and of its having attracted crowds of admiring visitors to the Water-lily house at Kew;—thus recommending itself to perpetuation by a figure.

Mr. Watson, the able cultivator and propagator of the Tropical houses at Kew, has drawn up for me the following history of the hybrid:—

"This is the result of a cross made at Kew in 1885 between *N. Lotus*, which has pure white flowers, and *N. devoniensis*, in which the flowers are deep red, the former being the female parent. The difference between this and *N. devoniensis* (itself a hybrid) is in colour, *N. kewensis* being rosy red, except the lower part of the petals, which is almost white; the apex of the petals too is broader and more rounded, and the stamens are narrower and almost orange in colour. Some of the flowers were nine inches in

diameter, and they remained open for several hours after noon, when all the *Lotus* section are closed. The plant flowers very freely and continuously from May till November. I have tried several times to hybridize species of the *stellata* section of *Nymphæa* with the *Lotus* section, but have always failed."

A comparison of the plate of *N. devoniensis* at tab. 4665 of this work, with that of *N. Lotus*, t. 797 (a small flowered state), corroborates the evidence which Mr. Watson gives of the hybrid origin of the *N. devoniensis*. With regard to the supposed hybridity of *N. devoniensis* which is said to be a cross between *N. rubra*, Roxb., and *N. Lotus*, there is much to be cleared up. In the "Flora Indica" (i. p. 241) Dr. Thomson, whose knowledge of the Indian forms of *Nymphæa* in India itself cannot be disputed, after a very prolonged study of these with me, arrived at the conclusion that *N. Lotus*, L., and *N. rubra*, Roxb., were varieties of one, distinguishable only by colour; and that *N. devoniensis* was a large deeper red form of the latter, and is common in tanks and still waters near Calcutta. Further, when it is remembered that *N. Lotus* is white-flowered and *N. rubra* a pale red, it is incomprehensible that the result of crossing these should be the intensifying the red of the petals of *rubra* in a most extraordinary degree, the introducing into its scapes and petioles a dark maroon brown colour, and the replacing the pale and dark green stripes of its sepals by red and brown ones. I would refer those desirous of pursuing this subject to the discussion on *N. Lotus* in the "Flora Indica" already referred to, where the contradictory published accounts of the supposed Indian and African species allied to *rubra*, *Lotus*, *pubescens*, &c., the vagueness of the characters ascribed to them, and the varieties that occur in India from any one form assumed to be typical, are all detailed.—*J. D. H.*

Fig. 1, Insertion of petiole on base of leaf; 2 and 3, stamens; 4, top of ovary :— *all but fig.* 1 *somewhat enlarged.*

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Vincent Brooks Day & Son Imp

Tab. 6989.

BRODIÆA (Triteleia) Howellii.

Native of the Western United States.

Nat. Ord. Liliaceæ.—Tribe Allieæ.

Genus Brodiæa, *Smith*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 800.)

Brodiæa (Triteleia) *Howellii*; bulbo parvo globoso, foliis 2 radicalibus linearibus glabris viridibus facie canaliculatis, scapo gracili 1–2-pedali, umbellis 4–8-floris, bracteis pluribus parvis lanceolatis membranaceis, pedicellis flore subæquilongis, perianthio albido vel pallide lilacino, segmentis oblongis obtusis viridi carinatis, tubo late infundibulari paulo brevioribus, antheris omnibus perfectis filamentis brevibus inæqualibus, ovario stipitato, stylo brevi.

B. Howellii, *S. Wats. in Proc. Amer. Acad.* vol. xiv. (*Contr.* ix.) p. 301.

This is a new species of Lindley's genus *Triteleia*, which in my monograph of the gamophyllous Liliaceæ, published in 1871 in the eleventh volume of the Journal of the Linnean Society, I reduced to *Milla*, but which Mr. Bentham, following Dr. Sereno Watson, has placed under *Brodiæa*. The essential difference between *Triteleia* and the original Brodiæas of Smith is that in the latter three of the anthers are suppressed, whilst here all the six are fully developed. Since the publication of my paper several new species have been discovered in California and the Western United States. The present plant is allied to *B. laxa* and *B. peduncularis*, both of which are tolerably familiar to English cultivators, though neither of them has yet been figured in the Botanical Magazine. *B. Howellii* was discovered in Washington territory, by the collector whose name it bears, in the year 1879. Our drawing was made from a plant flowered in the south-west of Ireland by Mr. W. E. Gumbleton last April.

Descr. *Bulb* globose, half an inch in diameter; outer tunics thin, brown, splitting into long threads at the top. *Leaves* two, linear, radical, contemporary with the flowers, bright green, glabrous, channelled down the face, about a foot long. *Peduncle* slender, terete, fragile, sometimes flexuose, one or two feet long. *Flowers* four to eight in an umbel, white or pale lilac; spathe-valves several, small,

lanceolate, membranous; pedicels about as long as the flowers, articulated at the apex. *Perianth* half or three-quarters of an inch long; segments oblong, obtuse, keeled with green, rather shorter than the broadly funnel-shaped tube. *Stamens* inserted at the throat of the perianth-tube; anthers all perfect, those opposite the outer segments with a very short, those opposite the inner segments with a longer filament. *Ovary* oblong, distinctly stipitate; ovules about six in a cell; style short; stigma capitate. *Fruit* a capsule.—*J. G. Baker.*

Fig. 1, Section of leaf; 2, flower opened out, with two segments taken away; 3, pistil:—*all more or less enlarged.*

M.S. del, J.N Fitch lith.

Vincent Brooks, Day & Son Imp.

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Tab. 6990.

MASDEVALLIA GIBBEROSA.

Native of New Grenada.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Masdevallia, *Ruiz & Par.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 492.)

Masdevallia (Verrucosæ) *gibberosa*; folio coriaceo oblongo-obovato v. -lanceolato obtuso in petiolum attenuato, pedunculo elongato gracili racemi rachi pedicellis ovariisque verrucosis, racemo laxe paucifloro, bracteis appressis vaginantibus truncatis membranaceis, pedicellis gracilibus apice decurvis multo brevioribus, sepalis lateralibus e basibus connatis liberis horizontaliter patentibus oblongis in caudas filiformes lamina carnosa flava rubro-punctata æquilongis productis, dorsali galeato ascendente costato in caudam rubram multoties longiorem erectam producto, petalis minutis oblique oblongis obtusis, labello incluso obovato-oblongo margine serrulato lobis lateralibus angustis erosis terminali **parvo obcordato serrulato, columna gracili apice alata.**

M. gibberosa, *Reichb. f. in Gard. Chron.* N. S. vol. v. (1876) p. 8.

A very singular species, described by Reichenbach (in 1876) as the fourth of the section *Verrucosæ*, but with the sepals of the *Echidna* group, and the lip of the *Verrucosæ*. It appears to be the only figured species of the section, the others being *M. verrucosa*, Reichb. f., *M. Echidna*, Reichb. f., and *M. ochthodes*, Reichb. f., all natives of Venezuela. As with other members of the genus, the floral characters are very difficult of description, each member being bizarre in form, position and direction. In the present species the lip is especially puzzling to describe, and its structure is not well shown in the accompanying drawing. Reichenbach says of it, "The minute lip is quite exquisite, and contrasts very strongly with the plump broad rhomboid yellowish petals," and in the Latin diagnosis he describes it as linear, and as if divided into three members by two strictures, an entire angled narrow hypochile, a rounded serrate mesochile, with an oblique square lamella on each side, serrated at the back, and a rounded serrate epichile. I have carefully dissected the lip of this plant, and have described below its appearance, which differs a little from Reichen-

bach's characters, though no more than may fairly be put down to variations from a type common to both.

M. gibberosa is a native of New Grenada, whence it was sent to Messrs. Veitch by their collector, Mr. Wallis. The species here figured flowered in the Royal Gardens in March, 1879. Though not one of the showy species, it has the advantage of flowering nearly all the year round.

DESCR. *Rootstock* slender, creeping. *Leaves* solitary, three to five inches long including the petiole, coriaceous, oblong-obovate or lanceolate, obtuse, channelled; nerves very obscure; basal sheath short, tubular; petiole very variable in length. *Peduncle* six to ten inches long, slender, erect, bearing a lax erect raceme of four to eight distant flowers, surface covered with warts as are the rachis of the raceme, pedicels and ovary; sheaths very few, distant, and bracts tubular, membranous, appressed, truncate; pedicels half an inch long, deflexed at the tip; flowers two and a half to three inches across the lateral sepals. *Dorsal sepal* boat-shaped, dull red with strong greenish ribs, ending in a filiform red tail five times as long as the lamina; lateral sepals connate to the middle of the blade in a concave green ribbed lamina, then each spreading out horizontally into a thick oblong yellow blade spotted with red which contracts into a narrow yellowish tail. *Petals* very small, rhomboidly oblong, yellow, two nerved, tips callous. *Lip* very small, one-eighth of an inch long, consisting of an oblong obovate lamina with serrulate edges, and a small serrulate terminal lobe; the basal portion of the lamina is membranous and faintly three-nerved, the distal end is fleshy and granulate with a raised sausage-shaped fleshy callus towards either margin, and the terminal lobe is rounded-obcordate, and narrower than the lamina. *Column* slender, suddenly expanding into a winged membranous hood.—*J. D. H.*

Fig. 1, Portion of flower laid open, showing the bases of the dorsal and lateral sepals, lip and column; 2, lip; 3, tip of ovary, petals and column; 4, front view of column; 5, outer, and 6, inner view of anther:—*all enlarged.*

Vincent Brooks, Day & Son Imp.

Tab. 6991.

CAUTLEYA lutea.

Native of the Himalaya Mountains.

Nat. Ord. Scitamineæ.—Tribe Zingibereæ.

Genus Cautleya, *Royle Ill. Bot. Himal.* p. 361.)

Cautleya *lutea;* glaberrima, caule gracili foliato, foliis lanceolatis caudato-acuminatis, vaginis elongatis, spica dissitiflora, bracteis calyci appressis, calyce tubuloso gracili rubro-purpureo ore obtuse bidentato, corollæ flavæ tubo calyce longiore lobo postico erecto lineari-oblongo subacuto fornicato concavo, lateralibus oblongis obtusis recurvis, staminodiis lateralibus erectis sepalo postico parallelis et eo subsimilibus sed paullo latioribus et obtusis, labello petalis æquilongo alte bilobo, lobis oblongo-lanceolatis acutis, anthera lineari apice obtuse 2-lobo connectivo basi loculis æquilongo deorsum dilatato obtuse 2-lobo, capsula globosa carnosula valvis 3 recurvis, seminibus angulatis, arillo brevi.

Cautleya lutea, *Royle l.c.*

Roscoea gracilis, *Smith in Trans. Linn. Soc.* vol. xiii. p. 460; *Horanin. Prodr. Monogr. Scit.* p. 21.

R. lutea, *Royle l. c.* 361, t. 89, f. 2.

In 1839 Dr. Royle, in his Illustrations of Himalayan Plants, published and figured the *Roscoea gracilis* of Smith under the name of *lutea*, not having recognized its identity with the previously published plant. Under his description of it he observes that he had formed it into a distinct genus, under the name of *Cautlea* (an error for *Cautleya*), in compliment to his friend Captain Cautley, F.G.S., but in deference to the opinion of botanical friends, he had referred it to *Roscoea*. Royle gives no reason for having formed of this plant a new genus, and his botanical friends, on advising him to suppress it, were no doubt aware that both itself and several other very closely allied plants were included in *Roscoea* by Smith and others. Bentham (Gen. Plant. iii. 641) remarks of Royle's *Cautlea* that it forms a section of *Roscoea*, or almost a new genus, with flowers (always?) yellow in an exserted spike, the corolla-tube hardly exceeding the calyx, the ovary short and broad, and the capsule globose with three coriaceous valves that becoming reflexed expose the seeds, which are retained by the fleshy placenta. Having collected and examined several species of

this section in the Himalaya, as also of the purple-flowered section with a slender ovary and capsule (see *R. purpurea*, Smith, Tab. 1630), I have no hesitation in believing that Royle's genus should be retained; and I do this with the greater pleasure, because the name commemorates the person and services of an old friend, and one of the most distinguished officers of the Honourable East India Company's Service, Major-General Sir Proby Cautley, F.R.S., of the Bengal Engineers, the Engineer of the Ganges Canal, and joint author with Dr. Falconer of the most magnificent of all geological works, the "Fauna Antiqua Sivalensis."

C. luteo is a common plant in the Himalaya at elevations of 5000 to 8000 feet from Kashmir to Bhotan, and it also occurs on the Khasia Mountains at 5000 to 6000 feet. The specimen here figured is from plants raised at Kew from seed sent by C. B. Clarke, Esq., F.R.S., which flowered in August of last year. The fruit ripened a month later.

Descr. *Stems* eight to eighteen inches high, tufted, erect from the rather swollen rooting base, leafy all the way up. *Leaves* five to ten inches long, narrowly lanceolate with a slender tip, bright green above, paler or suffused or streaked with red-brown beneath; sheaths long and slender, green, often striped with dark red. *Spike* four to eight inches high, shortly exserted from the uppermost leaf-sheath; rachis slender, stiff, purplish red; flowers rather remote; bracts shorter than the calyx, appressed to it, subacute, green or red-purple; flowers one and a half to two inches long from the base of the calyx to the tip of the dorsal sepal. *Calyx* tubular, red-purple, two-fid at the mouth. *Corolla* golden yellow; tube exserted. *Sepals* linear-oblong, obtuse, concave, dorsal erect, lateral reflexed. *Lateral staminodes* like the dorsal sepal, erect, tips incurved. *Lip* two-lobed, lobes oblong acute. *Filament* very short and broad; anther-tip obtusely notched, connective produced below into a dilated two-lobed appendage. *Capsules* one-third of an inch in diameter, globose, fleshy, red-brown; valves three, broad, reflexed. *Seeds* angular, blue-black; aril cupular, shorter than the seed.—*J. D. H.*

Fig. 1, Calyx and style; 2 and 3, stamen; 4, ovary and stylodes; 5, stigma; 6, fruiting spike; 7, seeds with, and 8, without the aril:—*all but fig.* 6 *enlarged.*

Vincent Brooks, Day & Son Imp.

Tab. 6992.

ABIES Nordmanniana.

Native of Asia Minor.

Nat. Ord. Coniferæ.—Tribe Abietineæ.

Genus Abies, *Juss.* (*in part*) ; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 441.)

Abies *Nordmanniana ;* arbor excelsa, coma pyramidali, ramis horizontalibus verticillatis inferioribus deflexis, foliis in ramulos steriles crebris, aliis distichis patulis, aliis decumbentibus subimbricatis, omnibus linearibus planis apice retusis supra saturate viridibus vix sulcatis subtus uni-costatis albo-bilineatis, foliis in ramulos amentiferos curvis ascendentibus erectisve, amentis sessilibus elliptico-oblongis cylindraceisve, bracteis e basi oblonga spathulatis cuspidatis exsertis reflexis, squamis e basi brevi cuneata reniformibus secus marginem puberulis, seminis ala cuneata nucleo subduplo breviore.

A. Nordmanniana, *Spach Hist. Nat. Phanerog.* ii. 418 ; *Carriere Conif.* p. 203 ; *Henkel & Hochst. Conif.* p. 173 ; *Regel Gartenfl.* vol. xx. (1871) p. 259, t. 699 ; *Boiss. Fl. Orient.* vol. v. p. 703.

Picea Nordmanniana, *Loud. Encycl. Pl.* p. 1042, fig. 1950.

Pinus Nordmanniana, *Steven in Bull. Soc. Mosq.* 1838, p. 45, f. 2 ; *Antoine Conif.* t. 22, f. 2 ; *Endl. Syn. Conif.* p. 93.

P. Abies, *Parlat. in DC. Prodr.* xvi. ii. 421 (*in part*).

? P. Picea, *var.* leioclada, *Steven ; Ledeb. Fl. Ross.* vol. iii. p. 669.

? P. Picea, *Pall. Fl. Ross.* vol. i. p. 7.

A. Nordmanniana belongs to a group of five closely allied European and West Asiatic Silver-firs, the limits of which are not yet well defined. Of these the type is *A. pectinata*, Link, the common Silver-fir, which extends from the centre of France eastwards to middle Russia, and reappears in Macedonia and Greece, extending to Anatolia in the extreme east of Asia Minor, and according to Ledebour also in the Caucasian districts of Imeretia and Ossatia. *A. Apollonis*, Link, with its varities *Panachaica* and *Reginæ Ameliæ*, is confined to the mountains of Greece and Macedonia. *A. cephalonica*, Link, is more restricted still, being found only in the small island whose name it bears. Both these last are considered as forms of *A. pectinata* by Heldreich, the most competent authority by far on Greek botany. *A. cilicica*, Antoine and Kotschy, is the most southern species, being confined to the Taurus and Anti-Taurus Mountains in Ancient Cilicia, and to the Lebanon ; it is the only Levantine species, and differs remarkably from all the above, and from the following in the retrorsely hooked angles of the scales. Lastly, there is

A. Nordmanniana, to which the geographical limits assigned by Boissier are all in the mountains towards the east and south-east shores of the Black Sea, including the south-western spurs of the Caucasus (the provinces or districts of Trebizond, Armenia, Guriel and Imeretia).

It is obvious that, according to the above data, which I have obtained from the most reliable sources, the limits of some of these species overlap in a remarkable manner, and which, seeing how difficult their discrimination is, suggests the probability of the localities assigned to some of them being erroneous. Thus, in the southern Caucasus, *A. pectinata* and *Nordmanniana* are said to occur in the same provinces, which is very unlikely to be the case; and I hence suspect that the Caucasian *A. pertinata*, which is referred by Ledebour to a variety of that species with glabrous branches, is really *A. Nordmanniana*, and if so, Pallas is its discoverer in the last century. Again, the Macedonian and Greek localities for *P. pertinata* being those also inhabited by *A. Apollonis*, suggests that the latter tree was taken for *A. pectinata*. What the Anatolian *A. pertinata* is may be doubtful, and it would be very interesting to ascertain. I do not overlook the fact that the Crimea has been quoted as a locality for *A. Nordmanniana*, and that it is hence often called the Crimean Silver-fir, but I know of no certain authority for this locality and name. Nor is it known to me whether any Silver-fir inhabits the Crimea. The nearest ally of all these species is the Affghan and Himalayan *A. Webbiana*, which approaches *A. Nordmanniana* more nearly than any of the more western species.

A. Nordmanniana is a noble forest tree, attaining 150 feet in height, with a trunk six feet in diameter; it inhabits elevations of 2000 feet and upwards, growing with species of *Corylus*, *Carpinus*, *Cornus*, *Philadelphus*, and other European trees. It is one of the later introductions into Britain, and is by far the freest grower of the western Silver-firs, thriving in soils and situations where none of the others succeed. The cone-bearing branch figured is from the grounds of H. C. Rothery, Esq., of Ribsden, Bagshot; the smaller ellipsoid cone is from a native specimen.—*J. D. H.*

Fig. 1, Leaf; 2, section of do.; 3, ventral, and 4, dorsal view of scales; 5, bracts; 6 and 7, seeds (imperfect):—*all but fig.* 2 *of the natural size.*

M S del J N Fitch 11th.

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Tab. 6993.

DENDROBIUM clavatum.

Native of the Himalaya and Assam.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

(Genus Dendrobium, *Swartz*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 498.)

Dendrobium (Stachyobium) *clavatum*; caulibus elongatis robustis sulcatis superne foliosis, internodiis teretibus vaginis subappressis fere obtectis, foliis coriaceis oblongis oblongo-lanceolatisve obtusis, racemis lateralibus plurifloris, pedunculo ochreis truncatis vaginato rachique robusto, bracteis oblongis, floribus 2–3 poll. diam., sepalis oblongis petalisque fere orbiculatis obtusis aurantiacis, labello infra medium tubuloso dein in laminam orbicularem subcampanulatam dilatato aureo intus sanguineo, ore dilatato patente crenulato intus tomentoso, marginibus obscure lobatis fimbriato-ciliatis.

D. clavatum, *Wall. Cat.* No. 2004; *Lindl. & Paxt. Fl. Gard.* vol. ii. p. 194, fig. 189; ***Reichb. f. in Walp. Ann.* vol. vi. p. 293.**

This magnificent species has never been described or figured in all its beauty as here represented, and yet it is one of the earliest discovered of the golden Dendrobes of India, having been found by Wallich in Nepal in 1821, and subsequently by his collectors in Silhet. Unfortunately the specimens he distributed were not in flower, and the species was hence passed over by Lindley in his "Genera et species Orchidearum." It was for some time supposed to be a variety of *D. moschatum*. The first description of it is that in Lindley and Paxton's "Flower Garden, drawn up from Assam specimens that flowered in England;" it is accompanied by a woodcut of the flower. Though having a wide range in distribution it must be a rare species; Strachey and Winterbottom found it in the North-West Himalaya in the province Kumaon, west of Nepal, which is perhaps the westernmost limit reached by the vast genus to which it belongs, but it has not been recorded from Sikkim or Bhotan, and very few collectors have met with it in Silhet or Assam. It must not be confounded with the *D. clavatum* of Roxburgh (*D. sulcatum*, Lindl., Tab. post. 6962), a much more common species, and to which, from its club-shaped stem, the specific name of *clavatum*

far better applies. The specimen here figured flowered in the Royal Gardens in September of last year; the plant was sent from the Khasia hills by Mr. Gustav Mann, in 1885, and flowers in September.

Descr. *Stems* tufted, two to three feet long, pendulous, half to three-quarters of an inch in diameter, tapering towards the tip; internodes one and a half to two inches long, green, deeply grooved with rounded interstices, clothed nearly to the top with a membranous appressed truncate sheath. *Leaves* towards the ends of the stem, four to six inches long by one and a half broad, elliptic-oblong or -lanceolate, obtuse, deep green, coriaceous. *Racemes* lateral, about six-flowered; peduncle stout, clothed with obliquely truncate lax ochreæ, about three-quarters of an inch long, the upper largest; rachis stout, curved; bracts two-thirds of an inch long, oblong, obtuse, concave, brown, deciduous; pedicel and ovary one and a half inch long. *Flowers* nearly three inches in diameter across the sepals, which are oblong, and as well as the much larger almost orbicular petals are spreading and bright orange yellow. *Lip* tubular at the base, with overlapping obscure lateral lobes, then expanding into an almost circular or reniform open limb with undulate shortly fimbriate subreflexed margins, inner surface densely tomentose, disk deep red-purple, margins broadly golden yellow.—*J. D. H.*

Fig. 1. Column and lip: 2 column and mentum; 3, anther; 4, pollen:—*all enlarged.*

M.S. del. C. Fitch lith.

Vincent Brooks Day & Son Imp.

Tab. 6994.

ALLIUM Suworowi.

Native of Central Asia.

Nat. Ord. Liliaceæ.—Tribe Allieæ.

Genus Allium, *Linn.* (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 802.)

Allium (Molium) *Suworowi;* bulbo magno ovoideo, foliis 6–7 dense rosulatis ensiformibus pedalibus vel sesquipedalibus glauco-viridibus glabris flaccidis, scapo valido stricto tereti bipedali, floribus permultis lilacinis in umbellam densam globosam dispositis, spathâ brevi valvis 1–2 ovatis pedicellis subæquilongis, perianthii segmentis lanceolatis viridi vittatis flore expanso patulis, staminibus conformibus filamentis subulatis perianthio paulo longioribus, antheris parvis oblongis lilacinis, ovario stipitato globoso acute trigono, stylo elongato.

A. Suworowi, *Regel in Act. Hort. Petrop.* vol. vii. p. 546; *Gartenfl.* 1881, p. 356, tab. 1062, figs. 4, 5; *Allii Asiæ Cent.* p. 82.

This is another species of the group of tall Alliums with dense heads of mauve-purple flowers, of which two species, A. Macleani, tab. 6707, and A. giganteum, tab. 6828, have already been figured in the Botanical Magazine. In a recent memoir by Dr. Regel on the Alliums of Central Asia, he enumerates ninety-seven species as occurring between the Caspian Sea and Mongolia, and of these more than half are new species which have been discovered by the recent Russian explorers. The present plant is a native of the Kirghis Desert and the vicinity of Bokhara. It was introduced into cultivation by Dr. Albert Regel and named in compliment to Herr J. P. von Suworow, Medical Inspector of the province of Turkestan. Our drawing was made from a plant that flowered in the herbaceous ground at Kew in May, 1887, which was received from Max Leichtlin, and the plant was also flowered last summer by Professor M. Foster, F.R.S., at Shelford, near Cambridge.

Descr. *Bulb* ovoid, large, simple. *Leaves* six or seven, arranged in a dense basal rosette, ensiform, a foot or a foot and a half long, an inch broad, rather glaucous green, flaccid, glabrous. *Scape* stout, terete, glaucous, stiffly erect, two feet long. *Umbel* very dense, globose, two or

three inches in diameter; spathe broad, ovate, about an inch long, entire or bifid, green or tinged with red; pedicels about an inch long. *Perianth* dark mauve-purple, a quarter of an inch long; segments lanceolate, keeled with green, spreading widely when fully expanded. *Stamens* uniform; filaments subulate, rather longer than the perianth segments; anthers small, oblong, mauve purple. *Ovary* stipitate, globose, acutely trigonous, not papillose; style reaching up to the anthers; stigma minutely tricuspidate.—*J. G. Baker.*

Fig. 1. The whole plant, *much reduced*; fig. 2. leaf; fig. 3. umbel, and apex of scape, *both life-size*; fig. 4. an entire flower; figs. 5 and 6, stamens; fig. 7, pistil:—***all more or less enlarged.***

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Tab. 6995.

ALPINIA officinarum.

Native of South China.

Nat. Ord. Scitamineæ.—Tribe Zingibereæ.

Genus Alpinia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 648.)

Alpinia *officinarum*; rhizomate crasso repente, caule basi tuberoso erecto folioso, foliis anguste lanceolatis caudato-acuminatis glaberrimis marginibus lævissimis basi angustatis in vaginam sessilibus, vagina elongata in ligulam erectam elongatam producta, scapo terminali robusto erecto pubescente, spica simplici floribus sessilibus, ovario globoso tomentoso, calyce subcampanulato pubescente breviter obtuse 2–3-fido, corollæ tubo calyce subduplo longiore lobisque lineari-oblongis obtusis albis apices versus ciliatis, staminodiis lateralibus calcariformibus, labello oblongo obtuso integro v. emarginato albo disco sanguineo-nervoso, filamento crasso, antheræ loculis superne divaricatis.

A. officinarum, *Hance in Journ. Linn. Soc. Bot.* vol. xiii. p. 6, and in *Journ. Bot.* 1873, p. 175; *Benth. & Trim. Med. Pl.* vol. iv. t. 271.

The subject of this plate, the "lesser or Chinese Galangal," was formerly in great repute as an aromatic stimulant amongst the Arabs and Greeks, and formerly in Western Europe, but is now banished from the British pharmacopœias. The plant that produced it was unknown to Botanists till 1867, when Mr. Sampson, accompanied by that excellent Botanist the late Dr. Hance of China, discovered it near the village of Tung-sai, on the peninsula of Lei-chau-fu, opposite the Island of Hainan (Lat. 20° N.), on which island also it has been found by the late Mr. Swinhoe. Roots alone were first obtained, apparently from a formerly cultivated spot, but the plant was subsequently found wild on the island of Hainan itself, and living and dried specimens were procured which enabled Dr. Hance to describe the plant with accuracy, and to determine its being a new species of *Alpinia*, to which he gave the name of *officinarum*; and he further identified it with that producing the "radix Galangæ minoris" of pharmacists.

Its nearest affinity is, as Dr. Hance has indicated, the well-known *A. calcarata* (Roscoe in Trans. Linn. Soc. v. viii. p. 347), which is well described in Roxburgh's Flora

Indica, and figured in Roscoe's Monandrian Plants, and I am by no means certain that *A. officinarum* is not referable to that species, which was introduced from China into the Calcutta Botanical Gardens, and from thence into other Indian and English Gardens. Dr. Hance sums up th difference between *A. officinarum* and *A. calcarata* as follows, the characters of the latter being taken from specimens so named, cultivated in the Paradeniya Botanical Gardens, and supplied to him by the late Dr. Thwaites. "*A calcarata*; dried rhizoma chestnut brown, furrowed; cut surface brown; colour stronger; taste bitter, with a flavour of rhubarb; leaves deep green, aromatic, not hot, ligula one quarter to one half of an inch, rounded or truncate; racemes compound; flowers with an oblong bracteole; lip yellowish with dark red veins.—*A. officinarum*, dried rhizome red-brown, finely striate; cut surface rufous; taste warm aromatic, of ginger, pepper, and camphor, very hot; leaves lighter green, hot; ligule three-quarters to one and a quarter inch; racemes simple, bracteole 0; lip with no trace of yellow.

Now Mr. Hance has sent to the Kew Herbarium, together with specimens of his *A. officinarum*, some of the very ones which Mr. Thwaites sent him as *A. calcarata*, and upon which he instituted the above comparison; and after a careful examination of the latter, I very much doubt its being Roscoe's plant of that name; for (what Dr. Hance does not remark) the leaf margins are spiculose-toothed, whereas those of *A. calcarata* as figured and described by Roscoe, (Monand. Pl. t. 68) are like those of *A. officinarum*, perfectly smooth; moreover the ligule in Roscoe's figure is quite as long (fully an inch) as in *A. officinarum*. The racemes which are compound in Thwaites' plant, are (as in *A. officinarum*) simple spikes in Roscoe's figure and description. In so far as I can determine the chief difference between Roscoe's and Hance's plant is the much larger flower of the former, which is one to one and a half inch long, and the darker coloured lip, suffused with yellow, and covered to the margins with red branching nerves. Of the differences depending on taste it is impossible to judge from dried rhizomes. With regard to the absence or presence of the bractlet of *calcarata*, which is described by Hance, it is, if present, overlooked by Roscoe, Roxburgh

and Wight; I suspect this may be accounted for by the fact that the flowers are produced in pairs, where the falling away of one without its bract may leave two at the base of the remaining flower. In conclusion, I think it probable that more than one species is included under *calcarata*. Roxburgh's unpublished drawing (by error named *Amomum spicatum*) agrees fairly well with Roscoe's, as it should, for Roscoe no doubt received the roots from the Calcutta Garden; it has an entire or 2-fid lip. The *Globba erecta* of Redouté (Lil. t. 174) referred by Roscoe and others to *calcarata*, has broader leaves and very luridly coloured flowers, with a 2-fid lip. The *A. calcarata* of the Botanical Register (t. 141), has broader strongly ciliate leaves with more divergent nerves and an orange yellow lip covered with red veins. Wight's *A. calcarata* (Ic. tab. 2028) is possibly *nutans*, a name partially erased on the plate. *Renealmia calcarata*, Andrews (Bot. Repos. vol. vi. t. 421), is I think Roscoe's *calcarata*, with a badly coloured deep red lip.

The specimen here figured was no doubt sent by Mr. Ford from the Botanical Gardens of Hongkong, and it has flowered annually for several years, in the Ecomia House at Kew, in the winter months.—*J. D. H.*

M S.del, C Fitch lith.

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Tab. 6996.

DOUGLASIA lævigata.

Native of the Alps of Oregon.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Douglasia, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 632.)

Douglasia *lævigata*; cæspitosa, glaberrima, foliis rosulatis oblongo- v. lineari-lanceolatis crassiusculis acutis obtusisve integerrimis, floribus umbellatis, umbellis 2–5-floris, involucri bracteis brevibus ellipticis ovatisve obtusis, pedicellis calyce duplo longioribus, calycis subcampanulati 5-fidi lobis ovatis ciliolatis, corollæ tubo calyce subduplo longiore, lobis obovato-rotundatis **integerrimis, ovario globoso stylo gracili.**

D. lævigata, *A. Gray in Proc. Amer. Acad.* vol. xvi. p. 105, and *Synopt. Fl. N. Amer. Ed.* 2, vol. ii. part. ii. p. 400.

A very interesting plant, from bearing the name of one who has introduced into Europe more beautiful and interesting hardy Western American plants than any previous or subsequent collector, and whose protracted and perilous solitary journey across the continent of North America, when as yet travelling amongst the native tribes was dangerous in the extreme, was a memorable feat in the annals of Geography. One species of the genus alone had been previously figured, the *D. nivalis*, Lindl. (Bot. Reg. t. 1886, and Hook. Ic. Pl. t. 180), upon which Lindley established the genus. This is also a native of the Rocky Mountains, where, on the Athabasca Pass, near Mounts Brown and Hooker in British Columbia, at an elevation of about 12,000 feet, it attracted the attention of Douglas by the patches of brilliant purple which it formed amidst surrounding snows. *D. lævigata* differs remarkably in habit from *D. nivalis* in the umbellate flowers, which are also considerably larger, have broader corolla-lobes, and are also more pink than purple. The genus of which four species are described in Gray's Synoptical Flora of North America, is too nearly allied to the well-known European, American and Himalayan genus *Androsace*, of which it has, as the above notice of *D. nivalis* shows, precisely the habit.

May 1st, 1888.

It differs chiefly in the longer corolla-tube, longer style and larger flowers. Indeed *D. nivalis* was first published as an *Androsace* by Graham in the Edinburgh Philosophical Journal (July, 1829), a circumstance overlooked by Lindley, who might otherwise have hesitated to found a new genus upon it; this he did chiefly on the few-seeded capsule, a character now known to occur in *Androsace*. That the length of the corolla tube is a futile differential character is shown by one of the species, *D. montana*, A. Gray, having the tube barely equalling the calyx. *D. lævigata* is a native of the Rocky Mountains in Oregon, and the specimen figured which flowered in the Royal Garden in November of last year and again early in the present year. The seeds were received from Dr. Gray in 1886, and the plant flowered early in the present year. **It is perfectly hardy.**

DESCR. A small densely tufted herb, glabrous, or with a very few scattered deciduous forked hairs. *Leaves* rosulate, bright green, one-half to three-quarters of an inch long, oblong or linear-lanceolate, acute or subacute, coriaceous, spreading. *Peduncle* about an inch long, stout erect. Involucral bracts four to six and a quarter of an inch long broadly ovate obtuse, bearing two or five-pedicelled flowers, and some reduced leaves and buds at the base of the pedicels, which are half an inch long. *Calyx* campanulate; lobes ovate, subacute, puberulous. *Corolla tube* about twice as long as the calyx terete not swollen; limb rose-pink, one-third of an inch in diameter; lobes very broadly obovate; oral glands triangular. *Stamens* small, inserted below the mouth. *Ovary* globose; style slender, stigma capitellate; ovules many.—*J. D. H.*

Fig. 1, flower; 2, calyx; 3, corolla laid open; 4, ovary; 5, placenta and ovules; 6, ovule:—*all enlarged.*

Tab. 6997.

PASSIFLORA violacea.

Native of Brazil.

Nat. Ord. Passifloreæ.—Tribe Passifloreæ.

Genus Passiflora, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 810.)

Passiflora (Decaloba) *violacea*; alte scandens, glabra, foliis subpeltatis petiolatis basi truncatis infra medium 3-lobis lobis divaricatis oblongo-lanceolatis subacutis integerrimis reticulatis, marginibus hic illic petioloque sparse glandulosis subtus glaucescentibus, stipulis 2 magnis foliaceis subdimidiato-oblongis subacutis, pedunculis axillaribus solitariis valde elongatis pendulis apices versus incurvis, floribus suberectis, involucri triphylli bracteis foliaceis lanceolatis, floribus speciocis, calycis tubo brevissimo basi profunde intruso, lobis oblongis intus coloratis calcare dorsali elongato viridi incurvo robusto terminatis, petalis oblongis obtusis pallide roseis, coronæ setis multiserratis extimis petalis fere æquilongis violaceis apicibus albis, interioribus brevibus purpureis, toro brevi, filamentis crassiusculis, antheris magnis, ovario tomentoso, stigmatibus crassis clavatis.

P. violacea, *Vellozo Flor. Fluminensis*, vol. ix. t. 84 (*non Masters in Mart. Fl. Bras.*). *André in Rev. Horticole*, 1885, p. 468, *cum. Ic.*

Hitherto this beautiful plant has been known only through the plate in the work cited above, which is a very characteristic one. That figured and described under the same name by Masters in the "Flora Brasiliensis," vol. xiii. pl. i. p. 612, t. 123, and supposed to be conspecific, more resembles *P. cornuta* of the same work, and differs in the more membranous leaves, cordate at the base, with broader lobes, the lateral lobes ascending, and the mid-lobe having a tendency to dilate in the middle, as also in the much shorter peduncles, and shorter calycine spurs. Other near allies are *P. Mooreana*, Hook. (Plate 3773 of this work), a native of the Argentine Republic, and *P. tucumanensis*, plate 3636, both of which have, beside other differences, serrated leaves, shorter peduncles, smaller flowers, short calycine spurs and more simple coronas.

P. violacea is supposed to be a native of Rio Janeiro, from whence there are presumably indigenous specimens in the Kew Herbarium sent by Mr. Glaziou, Director of Public Gardens in that city. The plant from which the

specimen here figured was taken, was purchased from the Nursery of Mr. Bruant of Poitiers, and flowered in the Palm House of Kew in September of last year. It is a very free-growing climber.

Descr. A tall glabrous climber, with slender pendulous branches and branchlets. *Leaves* three to five inches across the lateral lobes, petioled, subpeltate, trifid to below the middle, base truncate, lobes oblong-lanceolate acute, all narrowed from the base to the tip, the lateral diverging nearly at right angles with the mid-lobe, margins quite entire but with a few scattered glands, upper surface dull pale green, under a paler bluer green, rather glaucous; petiole one to one and a half inch long, terete, smooth except for a few scattered glands; stipules foliaceous, oblong-ovate, subacute, unequal-sided, one side produced below into a rounded auricle, coloured like the leaves; tendrils strong. *Pedunales* solitary from the same axils as the leaves and tendrils, one-flowered, six to eight inches long, slender, pendulous, upcurved towards the lip, thus bringing the flower to an erect position. *Involucral bracts* three, about an inch long, erect, very unequal sided, the larger produced downwards into an auricle. *Flowers* three inches in diameter, very shortly pedicelled above the involucre. *Calyx-tube* very short, terete, deeply intruded at the base, constricted a little below the bases of the lobes; lobes linear-oblong, concave, obtuse, pale pinkish lilac with a very broad green herbaceous dorsal centre that ends below the lip in an incurved green terete spur an inch long. *Petals* like the sepals without the green back and spur. *Corona* of innumerable filaments in many series, the outer of which are nearly as long as the petals, white at the base, then violet with white tips, the inner are much shorter and purple. *Torus* short cylindric. *Filaments* short, very thick, and like the short clavate styles as green spotted with purple. *Ovary* tomentose.—*J. D. H.*

Fig. 1, Section of flower with the sepals and petals removed; 2 and 3, portion of the corona; 4 and 5, anthers:—*all enlarged.*

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Tab. 6998.

CATASETUM Bungerothi.

Native of Venezuela.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Catasetum, *Richard;* (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 551.)

Catasetum *Bungerothi;* pseudobulbis breviusculis cylindraceis v. fusiformibus sulcatis, foliis elliptico-lanceolatis acuminatis, racemis multifloris, floribus amplis concoloribus eburneis pallide stramineis v. aureis labelli basi ochraceo, sepalis oblongis petalisque paullo majoribus obovato-oblongis abrupte caudato-acuminatis, labello maximo explanato orbiculari transverse oblongo v. subtriangulari, basi truncato-cordato breviter obtuse calcarato, columnæ ramis crasse subulatis, anthera in cornu porrecto producta.

C. Bungerothi, *N. E. Br. in Lindenia*, vol. ii. p. 21, tab. 57; *Gard. Chron.* Ser. 3, vol. i. (1877), p. 139, *cum Ic. Xylog.; Em. Rodigas in L'Illust. Hortic.* 1887, p. 31, t. 10; *Lindenia*, vol. iii. p. 19, t. 104 (*var.* Pottsianum), and p. 43, t. 116 (*var.* aureum).

This very striking plant was first made known by Mr. N. E. Brown's description, published in 1886, and drawn up from very imperfect materials sent by M. E. Bungeroth (Collector for the Compagnie Continentale d'Horticulture), from Venezuela. These consisted of dried specimens and a sketch, a reproduction of which accompanies the description in Lindenia, and which giving, as these did, very certain proofs of the remarkable character of the species, excited great interest in the Horticultural world. In January, 1887, a more complete description and figure appeared in the "Gardener's Chronicle," supplied by a specimen that flowered in the collection of F. G. Tautz, Esq., of Studley House, Hammersmith. In the article accompanying this description and figure, it is stated that a plant in full flower was shortly before sold in Stevens's rooms for fifty guineas.

C. Bungerothi is subject to a good deal of variation, in the colour of the flower and form of the lip and petals. In the original drawings and specimens that first bloomed in this country, the parts are all ivory-white, with the hollow of the spur ochreous, which colour is different on the lip around the mouth of the spur. In var. *aurum* the

flowers are figured of a bright golden colour that must have a brilliant effect; it is described as a very free flowering but not very vigorous form. Var. *Pottsianum* is figured with an ivory-white flower with a triangular lip, and dimidiate-lanceolate petals speckled with red, there are also a very few speckles of the same colour on the disk of the lip.

The specimen here figured is from a purchased plant that flowered in the Royal Gardens in October of last year; it differs from any of the varieties previously published in the pale greenish yellow of the flowers, and it wants the sharp toothlets or serratures on the margin of the lip which are represented in the "Gardener's Chronicle" figure, though there are traces of them. The flowers are slightly fragrant, and Mr. Brown informs me that as many as sixteen have been produced on one spike.—*J. D. H.*

Fig. 1, Column; 2, anther; 3 and 4, back and front view of the pollen masses strap and gland:—*all enlarged.*

Tab. 6999.

KŒMPFERIA secunda.

Native of the Assam Hills.

Nat. Ord. Scitamineæ.—Tribe Zingibereæ.

Genus Kœmpferia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 641.)

Kœmpferia *secunda*; caule erecto folioso, foliis membranaceis oblique ovato-lanceolatis caudato-acuminatis, spicis terminalibus sessilibus paucifloris, bracteis exterioribus vaginantibus in acumen sensim productis, calyce tubuloso fisso, corollæ tubo gracili elongato, lobis oblongo-lanceolatis acuminatis, staminodiis patentibus roseis, lateralibus oblongo-rotundatis obtusis, labello multo majore rotundato obtuse 2-fido, connectivo in laminam oblongam obtusam reflexam producto, fructu parvo ovoideo polyspermo, seminibus, oblongo-cylindraceis.

Kœmpferia secunda, *Wall. in Roxb. Fl. Ind.* vol. i. p. 19.

Monolophus secundus, *Wall. Pl. As. Rar.* vol. i. p. 24; *Horaninov Prodr. Monogr. Scitam.* p. 22.

Wallich, in the Plantæ Asiatica Rariores, proposed for his *Kœmpferia secunda* and several allied plants, a distinct genus, to be called *Monolophus*, distinguished from *Kœmpferia* by its leafy stem, terminal few-flowered spikes, and the broad crest of the anther; and the genus was taken up by Horaninov. Bentham has, however, rightly referred the species thus kept apart back to *Kœmpferia*, of which, indeed, they hardly form a section.

K. secunda is a very common plant in the Khasia Mountains, south of the Assam Valley, at elevations of 3000 to 4000 feet, where it grows in wet grassy and rocky places. The same, or a very closely allied species, occurs in Moulmayne; and a similar plant which may not differ specifically was found by the late Dr. Hance in the neighbourhood of the Buddhist Monasteries of Fi-loi-tsz, on the Canton River. It is not possible from dried specimens to identify absolutely these latter with *K. secunda*. Another quite distinct species abounds in the Khasia Mountains, and is also found in Sikkim; it is the *K. linearis*, Wall.; it has narrower leaves and a much narrower lip. Wallich describes the calyx of *K. secunda* as hairy, which is not the

case; and the appendage of the anther as lanceolate and acute, but it is oblong and obtuse in the live specimens, and in an analysis of the flower by Mr. Clarke. *K. secunda* was raised from seeds sent by Mr. C. B. Clarke, F.R.S. from the Khasia Mountains, which arrived in January, 1887, and the plants raised from them flowered at the end of September of the same year.

Descr. *Stems* erect, loosely tufted, six to ten inches high, slender, simple, sub-cylindric, leafy all the way up. *Leaves* three to three and a half inches long, the lower sm ller, membranous, obliquely lanceolate or elliptic-lanceolate, caudate-acuminate, base narrowed, sessile on the sheath which is slightly compressed and terminates in a broad obtuse membranous appressed ligule, bright green above, paler beneath; nerves five to six on each side, the midrib very slender. *Spike* terminal, few-fld.; bracts three-quarters to one inch long, green, terete, oblong, narrowed into a slender apex; bracteoles very small. *Calyx* tubular, slender, split above. *Corolla-tube* nearly one inch long, very slender, curved, reddish, lobes elliptic-oblong acuminate. *Lateral staminodes* broadly oblong or rounded, spreading and rather reflexed; lip rounded, larger than both staminodes put together, shortly bifid or notched at the extremity. *Anther* glabrous, connective expanding into a reflexed ovate-oblong obtuse lamina as long as the cells. *Fruit* small, one-fourth to one-third inch long, ovoid, many-seeded. *Seeds* cylindric-oblong, with an oblique thickened basal funicle.—*J. D. H.*

Fig. 1, Flower with bracteoles, the petaloid staminodes removed; 2, dorsal petal; 3, anther, stigma, and base of lip; 4, anther with the connective raised up; 4, ovary and stylodes; 6, stigma; 7, fruit; 8, the same enlarged; 9, seed:—*all but figs.* 1 *and* 7 *enlarged.*

del. J.N.Fitch lith.

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Tab. 7000.

HUERNIA aspera.

Native of Zanzibar.

Nat. Ord. Asclepiadeæ.—Tribe Stapelieæ.

Genus Huernia, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 784.)

Huernia *aspera*; caulibus decumbentibus v. declinatis, ramis adscendentibus cylindraceis lævibus glaberrimis 5–6-sulcatis interspatiis convexis, foliis minutis remotis dentiformibus, cymis sessilibus 2–3-floris, bracteis subulatis, pedicellis corolla brevioribus, sepalis lineari-subulatis patentibus, corolla campanulata intus saturate purpurea, lobis brevibus deltoideis acuminatis, coronæ exterioris lobis 5 brevibus, interioris lobis subulatis antheris paullo longioribus.

H. aspera, *N. E. Brown in Gard. Chron.* 1887, vol. ii. p. 364.

This little plant is interesting as being a tropical African member of a genus that has hitherto been known to occur only in South Africa. About a dozen species are described, most of which were first published long ago as Stapelias, from which genus *Huernia* was separated by Brown on account of its campanulate corolla. In the early years of this century, when succulents were favourite objects of culture, about half-a-dozen kinds of *Huernia* were known, and of these five are figured in the early numbers of this Magazine. These are enumerated under *H. brevirostris*, N. E. Br. (tab. 6379), which, with *H. oculata*, N. E. Br., are more recent additions. The above all closely resemble *Stapelia* in habit, and occur in the head-quarters of the tribe, which is the western districts of South Africa. *H. aspera*, on the other hand, not only inhabits a very distant and far different latitude and climate from these, but differs from them greatly in habit, which resembles a good deal that of the North African and Sicilian representative of the *Stapeliea*, the *Boucerosia Gussoniana* (*Apteranthes Gussoniana*, Tabl. 5087).

H. aspera was sent from Zanzibar by Sir John Kirk in 1886, and is no doubt a native of that island or of the opposite coast. The plant flowered in the Royal Gardens in September, 1887.

Descr. *Stems* straggling, procumbent, purplish brown,

with ascending divaricate green cylindric or fusiform branches, one and a half to four inches long; branches about half an inch in diameter, with five or six furrows, separated by rounded ridges. *Leaves* minute, tooth-like, distant, horizontal or recurved. *Flowers* few, in a sessile cyme; bracts subulate, and short pedicels dark purple. *Sepals* linear-subulate, greenish or purple, spreading. *Corolla* nearly one inch in diameter and as long, campanulate; lobes very short, broadly triangular, acute, sinus very shallow, with a central tooth, outer surface roughly papillose, pale purplish with broad dull veins; inner surface very dark purple, clothed with pointed papillæ. *Column* very short; outer corona of five broad short truncate very dark lobes; inner of five oblong-lanceolate yellowish erect incurved obtuse lobes, shortly produced beyond the anthers.—*J. D. H.*

Fig. 1, Base of column with sepals and corona; 2, column; 3, column with the five inner lobes of the corona removed; 4 and 5, pollinia :—*all enlarged.*

M.S. del. J.N. Fitch, lith.

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Tab. 7001.

PALICOUREA NICOTIANÆFOLIA.

Native of Brazil.

Nat. Ord. Rubiaceæ.—Tribe Psychotrieæ.

Genus Palicourea, *Aublet*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 125.)

Palicourea *discolor*; tota foliis supra exceptis subtiliter tomentellis, ramis teretibus, foliis oppositis elliptico-lanceolatis utrinque acuminatis basi in petiolum breviusculum angustatis, costa subtus nervisque 12–15-jugis validis, stipulis utrinque geminis subulatis, thyrso erecto contracto multifloro, rachi purpureo, bracteis minutis, floribus breviter pedicellatis, pedicello apice incrassato, calycis puberuli dentibus brevibus minutis, corolla cylindracea puberula flava lobis brevibus triangularibus rubro marginatis, tubo recto intus infra basin filamentorum villoso, staminibus medio tubo insertis, filamentis brevibus, antheris linearibus inclusis, ovario 2-loculari, ovulis loculis solitariis erectis, disco hemispherico, bacca immatura parva suborbiculari compressa sulcata purpurea puberula 2-sperma.

P. nicotianæfolia, *Cham. & Schlecht. in Linnæa*, vol. iv. (1829), p. 18; *DC. Prodr.* vol. iv. p. 529.

P. discolor, *Hort.*

The genus *Palicourea* embraces a host of tropical American plants, of which the Brazilian species only are well named. Unfortunately the fascicle of the grand work of Martius, in which these last are described, is at the book-binder's, and will, I fear, not be returned to the Library before this page must go to press. I have no hesitation, however, in referring this plant to *P. nicotianæfolia*, a species first sent to Europe by the Brazilian traveller, Sellow, and very carefully described by Chamisso in the Linnæa. There are specimens of it in the Kew Herbarium, collected by Burchell in several places, at Rio by Miers and Glaziou, and it is the No. 2603 of the catalogue of the latter collector. It resembles many other species of Brazil, Guiana, the West Indies and Central America, but is distinguished, besides the form and nervation of the leaves, by the stipules, the very fine tomentum of all parts but the leaves, the narrow thyrsus, the minute calyx, straight tubular corolla with a ring of villi obscurely disposed in pencils below the middle of the corolla-tube. In some

specimens the tips of the anthers are exserted, in others the style, whence it may be assumed that the flowers are more or less dimorphic. The leaves in the cultivated plant are rather narrower than in the common Brazilian form. The specimen here figured has been for some years at Kew, and all tradition of its origin is lost. It flowers in the month of September.

DESCR. A shrub; branches terete or very obscurely angled; all parts but the upper surface of the leaves clothed with a very fine tomentum. *Leaves* opposite, five to nine inches long, elliptic-lanceolate or oblong, two to three inches broad, acuminate, rather membranous, bright green above, yellow green below with twelve to fifteen pairs of stout arching nerves, which as well as the stout midrib are reddish, the nerves above are yellow; cross nervules very faint; base narrowed into a petiole a quarter to half of an inch long; stipules two on each side of the petiole, subulate, erect, united at the distant bases. *Thyrsus* terminal or from the upper axil, four to seven inches long, contracted, erect or inclined; peduncle stout, terete, and rachis and branches red; bracts subulate, deciduous. *Flowers* two-thirds of an inch long, shortly pedicelled, pedicel swollen beneath the small pubescent calyx. *Calyx-lobes* triangular. *Corolla* tubular, quite straight, slightly swollen at the base, pale yellow, tomentose; mouth hardly dilated, lobes short triangular margined with red; tube with a row of long villi more or less collected in five pencils below the middle. *Stamens* five, inserted above the middle of the tube; filaments very short, slightly hairy at the base; anthers slender. *Ovary* two-celled, subglobose, pubescent, crowned with a tumid hemispheric disk. *Style* slender, stigma obscurely two-lobed, ovules one erect in each cell. *Drupe* about one-third of an inch in diameter, subglobose, rather flattened and broader than long, deeply grooved, dark purple. —*J. D. H.*

Fig. 1, Bud; 2, corolla laid open; 3, pistil; 4, ovary laid open, showing the ovules; 5, young fruit:—*all enlarged.*

M.S.del.J.N.Fitch.lith.

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Tab. 7002.

CASSIA coquimbensis.

Native of Chili.

Nat. Ord. Leguminosæ.—Tribe Cassieæ.

Genus Cassia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 571.)

Cassia (Chamæsenna) *coquimbensis*; fruticosa, glabra v. tenuiter puberula, foliis eglandulosis, foliolis 4–6-jugis brevissime petiolulatis elliptico- v. obovato-oblongis apice rotundatis muticis v. mucronatis, stipulis subulatis, racemis laxifloris subcorymbosis, bracteis lineari-subulatis, floribus gracile pedicellatis aurantiacis, sepalis oblongis obtusis, petalis majoribus obovato-obcordatis minoribus obovato-oblongis, staminibus perfectis 7, 2 ceteris multoties longioribus, 5 minoribus filamentis subnullis, staminodiis parvis deformatis viridibus, legumine lineari recto complanato mucronato, seminibus valvis parallelis.

C. coquimbensis, *Vogel. Syn. Cass.* p. 27; *Benth. Revis. Cassia in Trans. Linn. Soc.* vol. xxvii. p. 540.

C. flaccida, *Clos. in Gay Flor. Chil.* vol. ii. p. 238.

C. froudosa, *var.* β, *Hook. & Arn. in Hook. Bot. Misc.* vol. i. p. 210.

This handsome species appears to be common in the neighbourhood of Coquimbo, whence specimens have been sent to Kew by many collectors. It belongs to a section of the genus that are chiefly tropical American, and distinguished by the flattened 2-valved pods, with seeds parallel to the septum. Many are well worth cultivation, and some are almost hardy; but the foliage being scanty, they are only effective when in flower. The genus contains no fewer than four hundred species.

The beauty of *C. coquimbensis* attracted the attention of Mr. Ball, F.R.S., when visiting Coquimbo in 1883; and who suggested the desirability of its being cultivated at Kew. Application for seeds was in consequence made to J. Grierson, Esq., H.B.M. Consul in Chili, who most obligingly procured seeds, which were received at the Royal Gardens in June, 1886; they were planted immediately on arrival, and the plants raised flowered in September, 1887.

Descr. A shrub, glabrous or finely sparsely hairy on the branches and leaves beneath; branchlets angled, herbaceous. *Leaves* two to four inches long, rachis angled;

leaflets four to six pairs, one-third to two-thirds of an inch long, sessile, elliptic-oblong or almost rounded, apiculate, pale green; nerves four to five pairs; stipules subulate. *Cymes* axillary, many-fld., subcorymbose; pedicels one to one and a half inch long, bracts minute. *Flowers* one and a half inches in diameter. *Sepals* oblong, obtuse, green, about half the length of the bright orange-yellow petals. *Dorsal* petal obcordate, rather the largest, two lateral broadly obovate, two anterior smallest obovate-oblong. *Stamens* seven, two with incurved filaments as long as the petals and incurved linear anthers; five much smaller at the base of the longer, with subsessile straight oblong obtuse anthers; staminodes subclavate, two-lobed, green. *Ovary* pubescent. *Pod* about four inches long, more than half an inch broad, stipitate, flattened, margined, smooth, acute at the base, mucronate at the tip.—*J. D. H.*

Fig. 1, Base of leaf, leaflets and stipules; 2, stamen and pistil; 3 and 4, anthers of larger stamens; 5, a small stamen; 6 and 7, staminodes; 8, pod:—*all but fig.* 8 ***enlarged.***

M.S. del. J.N. Fitch lith.

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Tab. 7003.

MACROTOMIA Benthami.

Native of the Western Himalaya.

Nat. Ord. Boragineæ.—Tribe Borageæ.

Genus Macrotomia, *DC.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 862.)

Macrotomia *Benthami;* herba elata hirsuto-hispidissima, foliis radicalibus elongato-lineari-lanceolatis subacutis basi semi-amplexicaulibus 5–7-costatis, caulinis sessilibus linearibus lanceolatisve, floribus in thyrsum elongatum cylindraceum spiciformem villoso-hispidum dispositis, bracteis lineari-elongatis foliaceis flores longe superantibus, corolla luride purpurea tubo glanduloso-piloso.

M. Benthami, *DC. Prodr.* vol. x. p. 27; *Hook. f. Fl. Brit. Ind.* vol. iv. p. 177.

Echium Benthami, *Wall. Cat.* 931; *G. Don Gen. Syst.* vol. iv. p. 333.

Leptanthe macrostachya, *Klotzsch in Reise Pr. Waldem. Bot.* p. 95, t. 63.

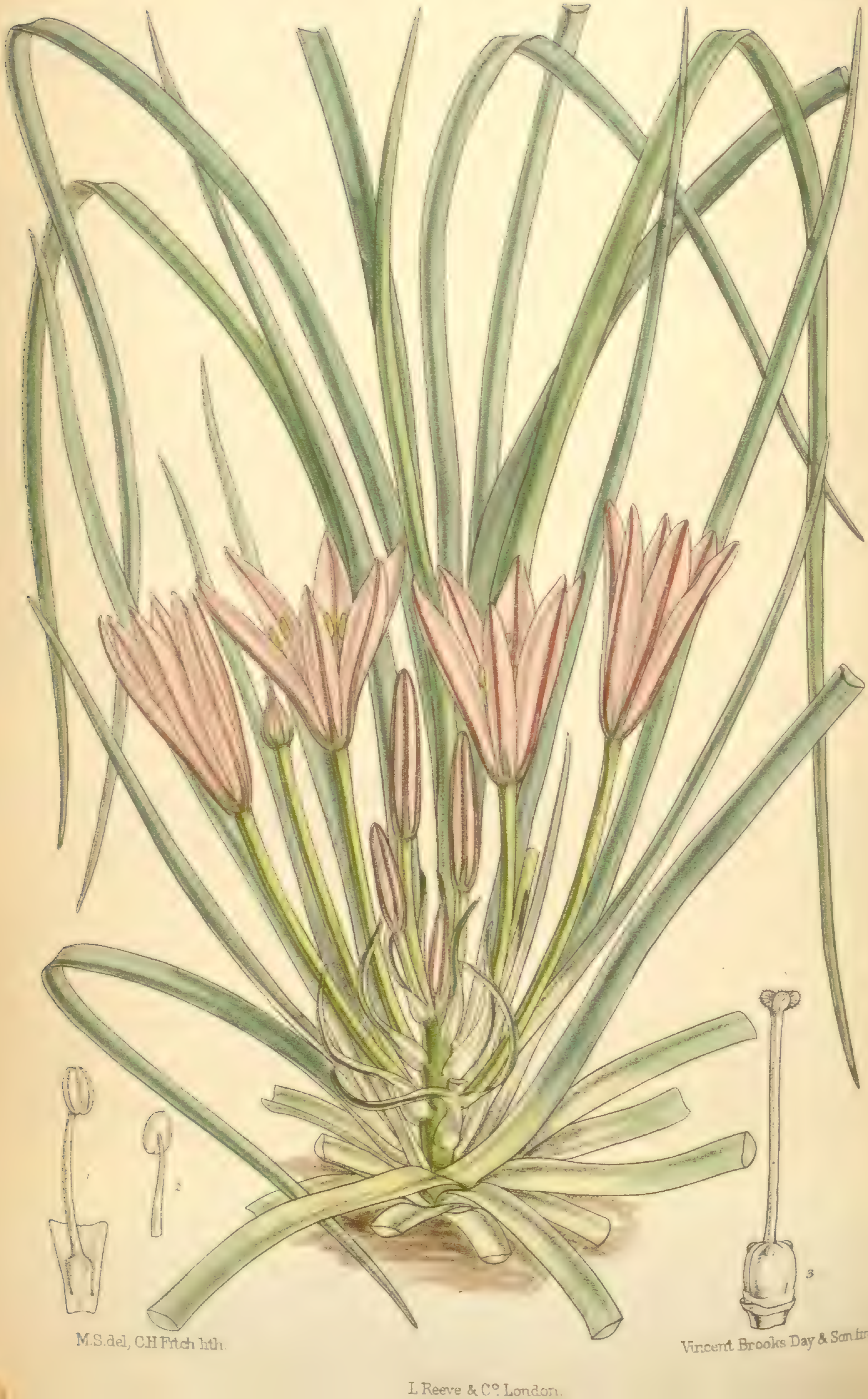
A stately plant, not uncommon in rocky places of the Western Himalaya. It was discovered in the province of Kumaon by Dr. Blinkworth, a correspondent of Dr. Wallich's, where it has since been found by Messrs. Strachey and Winterbottom at elevations of 12,000 to 13,000 feet; from thence it extends into Garwhal, where Mr. Duthie has collected it at 10,000 to 12,000 feet. From Kashmir it has been sent by many travellers, Royle, Falconer, Thomson, Clarke and Aitchison. There, the latter botanist informs me, it occurs at a thousand feet lower elevation, namely, 9000 to 11,000 feet. Dr. Aitchison writes that the root and flower are medicinal, but he does not say for what purpose they are used; he gives the native Kashmiri name of Khou Ka Zaban, and remarks that the leaves resemble a giant *Plantago*.

The specimen figured flowered in the Royal Gardens, Kew, in May, 1887, and was raised from seed received from Mr. Duthie of the Saharumpore Botanical Gardens in 1884. It differs from the description of the genus in the stamens being inserted far above the middle of the corolla, and in the style being very short, which suggests that the flowers are dimorphic.

Descr. A stout herb one to three feet high, everywhere hispidly hirsute. *Root* very stout. *Stem* as thick below

as the little finger, terete, green. *Radical leaves* six to ten inches long, narrowly lanceolate, obtuse or subacute, hirsute on both surfaces, bright green above, paler beneath; nerves stout, two to three on each side of the stout midrib, running nearly parallel with the margin; base subamplexicaul; cauline leaves many, smaller, sessile, linear-lanceolate, acute; uppermost (under the inflorescence) more ovate-lanceolate, three-nerved, reflexed. *Thyrse* eight to twelve inches high by three to four inches in diameter, cylindric, obtuse, dense-flowered, hirsutely hispid; bracts elongate, linear-lanceolate, much longer than the flowers, spreading and recurved. *Flowers* sessile, an inch long. *Calyx* divided to the base into five narrow linear villous segments longer than the corolla, green tipped with purple. *Corolla-tube* narrowly funnel-shaped, terete, covered with glandular hairs, glabrous within; lobes five, short, triangular-ovate, obtuse, spreading, dark maroon purple. *Anthers* sessile, a little below the mouth of the corolla, narrowly linear, yellow. *Ovary* four-lobed; style simple; stigma capitellate.—*J. D. H.*

Fig. 1, Flower; 2, corolla laid open; 3, pistil:—*all enlarged.*



M.S.del, C.H.Fitch lith.

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Tab. 7004.

ASPHODELUS acaulis.

Native of Algeria.

Nat. Ord. Liliaceæ.—Tribe Asphodeleæ.

Genus Asphodelus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 782.)

Asphodelus *acaulis;* perennis, fibris radicalibus cylindricis, foliis omnibus radicalibus dense rosulatis linearibus acuminatis dorso convexis margine minute serrulatis, floribus 6–20 in corymbum laxum pedunculo subnullo dispositis, bracteis magnis lanceolatis hyalinis viridi carinatis, pedicellis apice articulatis, exterioribus elongatis, perianthio infundibulari pallide rubello, segmentis oblongo-lanceolatis distincte viridi carinatis, staminibus perianthio duplo brevioribus antheris parvis, stylo elongato erecto apice stigmatoso tricuspidato, fructu parvo globoso-trigono, seminibus multis triquetris.

A. acaulis, *Desf. Fl Atlant.* vol. i. p. 302, t. 89; *Schult. f. Syst. Veg.* vol. vii. p. 49; *Kunth Enum.* vol. iv. p. 560; *Baker in Journ. Linn. Soc.* vol. xv. p. 271.

Gethosyne acaulis, *Salisb. Gen.* p. 72.

Clausonia acaulis, *Pomel in Bull. Bot. Soc. France*, vol. ix. p. 673.

This is an extremely distinct species of Asphodel which is found wild only in the provinces of Oran and Algiers. The individual flowers are rather like those of the well-known *Asphodelus albus* and its numerous varieties, but the general habit of the plant resembles that of *Ornithogalum umbellatum*, the flowers being arranged in a lax corymb, of which the peduncle is nearly obsolete. As it grows only in the lower part of Algeria, it does not get heat enough to flourish freely in England. Our drawing was made from a plant that flowered last May, in the herbaceous ground at Kew, which was collected by Mrs. Thiselton Dyer.

Descr. *Root-fibres* fleshy, cylindrical, two or three inches long. *Leaves* ten or twenty, forming a dense radical rosette, linear, tapering gradually to the point, half a foot or finally a foot long, firm in texture, persistent, dull green, minutely pubescent, very convex on the back, minutely serrulate on the narrowly cartilaginous margin. *Flowers* six to twenty, forming a lax corymb, with a very short or abortive peduncle; bracts large, lanceolate, hyaline, with a distinct herbaceous keel; pedicels articulated

at the apex, the outer two or three inches long. *Perianth* infundibuliform, pale pink, an inch or an inch and a half long; segments oblong-lanceolate, with a distinct narrow green keel. *Stamens* half as long as the perianth; filaments filiform; anthers small, oblong. *Ovary* sessile, globose; style elongated, erect, tricuspidate at the stigmatose tip. *Capsule* globose-trigonous, a third of an inch in diameter. *Seeds* numerous, small, triquetrous.—*J. G. Baker.*

Fig. 1, Front view of a stamen; 2, back view of a stamen; 3, pistil:—*all enlarged.*

Tab. 7005.

ILLICIUM verum.

Native of South China.

Nat. Ord. Magnoliaceæ.—Tribe Illicieæ.

Genus Illicium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 18.)

Illicium *verum*; foliis elliptico-lanceolatis v. oblanceolatis obtusis v. obtuse acuminatis in petiolum brevem angustatis, floribus axillaribus breviter pedunculatis globosis, perianthii foliolis ad 10 orbiculatis concavis coriaceis exterioribus majoribus ciliolatis intimis rubris, staminibus ad 10 brevibus filamento cum connectivo in corpus carnosum subovoidem confluente, loculis adnatis parallelis subremotis oblongis, carpellis ad 8 stigmatibus brevibus vix recurvis, carpellis maturis ad 8 cymbiformibus longiuscule rostratis.

I. anisatum, *Gærtn. Carp.* vol. i. p. 338, t. 69 (*non Linn.*).

The plant producing the true Star Anise of China is here for the first time figured and described. For many years the fruit so called was supposed to be that of *Illicium anisatum*, Linn. (see Bentl. and Trimen, Med. Pl. vol. i. t. 10), the Skimmi of Japan, or of *I. religiosum*, Sieb. and Zucc. (Tab. nost. 3965), supposed to be a native of China, but which is identical with *I. anisatum* of Linnæus and Loureiro. For an account of this plant, its history and characters, I must refer to Baillon's learned treatise, published in 1867, in his Adansonia (vol. viii. p. 1), and to papers by the late Dr. Hance and Dr. Bretschneider in the China Review (vol. ix. p. 283, &c.). It suffices here to observe that *I. anisatum* or *religiosum* are species with peduncles bracteate at the base, and long spreading inner perianth-segments, and that they hence belong to a different section of the genus from *I. verum*.

The first person to recognize the fact that neither *I. anisatum* of Linnæus or of Loureiro could be the true Star Anise of China was Dr. Bretschneider, then Medical Officer to the Russian Embassy at Pekin, who drew attention to the fact that the Japanese plant was a reputed poison; and that this had been confirmed by T. F. Eykman, who in a paper published in 1881 in the Mittheilung der Deutsche Gesellschaft für Natur- und Völkerkunde Ost-Asien (Heft xxiii. 23) had experimented with and given

the name of Sikimine to the poison. But the first definite information regarding the true Star Anise is contained in a letter addressed to me by the late Dr. Hance in October, 1881, which contained seeds of the true plant received that morning from Pakhoi in South China. And in the same year Mr. Ford of the Hong Kong Botanical Gardens sent to Kew fruit and fragments of the leaves of the true plant from Pakhoi. In his Report on the Hong Kong Botanical Gardens for 1882, Mr. Ford states that Mr. Kopsch, Commissioner of the Chinese Imperial Maritime Customs at Pakhoi, had obtained for him a few seedlings of the true Star Anise, of which three had survived, and had attained a height of nine feet in 1886, and flowered in the Botanical Gardens. He adds that they prove to belong to an entirely different species from *I. anisatum* and all other described species. In 1883 Mr. Ford sent living plants to the Royal Gardens, Kew, which flowered in November, 1887, and it is from one of these that the figure here given was drawn. In 1886 Mr. Ford sent dried specimens from his nine feet high plant.

There are several species of the genus *Illicium* to which *I. verum* is more nearly allied than to *I. anisatum*, all having globose flowers, but all differing from *verum* in the increased number of perianth-segments, stamens and carpels; these are the Indian *I. Griffithii*, H. f. and T., and *I. majus*, H. f. and T., respectively from the Khasia Mountains in Eastern Bengal, and the mountains of Tenasserim, and the *I. cambodianum*, Hance (in Trimen's Jour. Bot. 1876, p. 240, *I. cambodjianum*, Pierre, Flore Forestière Cochinchin. t. 4). The latter, a broad-leaved species with long-peduncled flowers, is a native of the Elephant Mountains in Cochin China. From all these *I. verum* differs, not only in the number of parts of the flower, but as Mr. Holmes (Conservator of the Museum of the Pharmaceutical Society), who has been so good as to examine them all for me, informs me, in taste of foliage and fruit, by which alone he could distinguish them, and pronounce *I. verum* to be specifically distinct from all others.

With regard to Loureiro's *I. anisatum*, from South China, under which he cites Linnæus and the Japanese Skimmi of Kæmpfer, it is altogether a doubtful plant. It is described as having yellow flowers, a six-leaved calyx,

spreading corolla and thirty stamens, and hence cannot be *I. verum*.

In his "Notes on Botanical questions connected with the export trade of China," printed at Pekin in 1880, Dr. Bretschneider calls attention to a Report by Mr. Piry on the trade of Pakhoi for 1878-9, which contains interesting particulars regarding the Star Anise. Of this he says it is brought to that port for exportation from the province of Kuangsi *via* Kin-chow, and that it is produced in two districts, Lung-chow on the borders of Annam, and Po-se in the West (or Canton) river close to Yunnan.

The Star Anise was, according to Hanbury (Pharmacographia, ed. 2, p. 22), first brought to Europe by the voyager Candish about the year 1588, and was first described by Clusius (Rarior. Plant. Hist. p. 202) in 1601 from fruits procured from London. It seems afterwards to have been imported *via* Russia (and hence called *Cardamomum siberiense*, or *Annis de Siberie*), and was used by the Dutch in the seventeenth century to flavour beverages. From China it is exported into Eastern Turkestan under the name of Chinese fennel, and in China itself it is called Pa kio nui hiang, or eight-horned Fennel; the fact being that though commonly compared with aniseed, the taste is really more like that of fennel; so that the name given it by Redi (Experimenta, p. 172) in 1675 was *Fœniculum sinense*. In China the Star Anise is employed as a condiment and as a spice, and it is still used to flavour spirits in Germany, France (where it is the flavouring material of Anisette de Bordeaux) and Italy. In England, according to Hanbury, it is used only as a substitute for oil of anise.

The propriety of giving the new name of *verum* to this interesting plant may be challenged on the ground that the Linnæan one of *anisatum* should be retained for it, and another be adopted for the Japanese plant so long supposed to be the origin of the Star Anise. The objections to this course are twofold: the first is, that Linnæus (Sp. Plant. Ed. 3, p. 664) clearly describes this as his *I. anisatum*, the Skimmi of Kæmpfer, and cites Kæmpfer's Amœnitates for the same. He, however, adds, "Planta a me non visa, fide Kæmpferi recepta, *forte Anisum stellatum officinarum*, quod adjectum Tetraodonti ocellari ejus

auget venenum." The italics are my own. The passage shows that Linnæus is not answerable for the reference of the Star Anise to *I. anisatum*. The second objection is, that it would require the adoption of another name for the old and well-known Japanese plant, for which, however, the synonym *I. religiosum* of Siebold and Zuccarini might be adopted.—*J. D. H.*

Fig. 1, Flower; 2, front, and 3, back view of stamen; 4, carpels; 5, side view of single carpel:—*all enlarged.*

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Tab. 7006.

CŒLOGYNE graminifolia.

Native of Moulmein.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Cœlogyne, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 518.)

Cœlogyne (Erectæ) *graminifolia*; pseudobulbis confertis ovoideis compressis 2-phyllis demum canaliculatis, foliis gramineis rigidiusculis striatis, scapis erectis breviusculis paucifloris basi vaginatis, vaginis ovato-oblongis arcte imbricatis, sepalis petalisque subæqualibus lanceolatis acuminatis albis, labello trilobo, disco 2-carinato, lobis lateralibus oblongis obtusangulis purpureo-striatis, terminali brevi ovato-oblongo recurvo aureo purpureo-striato.

C. graminifolia, *Parish and Reichb. f. in Trans. Linn. Soc.* vol. xxx. p. 146.

A native of Moulmein, where it was discovered by the Rev. E. C. Parish, M.A., along with many other interesting *Orchideæ*, of which not a few have been figured in this Magazine. It belongs to a section of the genus that is copiously represented in the mountain region of India, from the Himalaya to the Western Ghats on the West, and the Burmese ranges on the East. Typical examples figured in this Magazine are *C. elata*, Tab. 5001, *C. ochracea*, t. 4661, *C. ocellata*, t. 3767, and *C. Cumingii*, t. 4645.

The specimen here figured flowered at Kew in January of the present year; it was sent in a collection of orchids from Shillong in the Khasia Mountains by Mr. Gustav Mann, Superintendent of Forests in Assam, and is presumably from that country.

Descr. *Pseudobulbs* crowded, ovoid, one to one and a half inches long, compressed, acutely ribbed when full-grown. *Leaves* two at the apex of the pseudobulb, grass-like, twelve to eighteen inches long by half an inch broad, linear-elongate, obtuse or subacute, dark green and deeply grooved above along the midrib, paler keeled and striate beneath. *Scape* basal, one to two inches long, clothed at the base with ovate-oblong acute closely imbricate sheaths; raceme two- to four-flowered. *Flowers* nearly two inches wide across the petals; pedicel and ovary together about one inch long. *Sepals* narrowly oblong-

lanceolate, acute, white. *Petals* like the sepals, but rather narrower. *Lip* three-lobed, lateral lobes oblong with rounded angles, white streaked with purple, midlobe ovate-oblong, obtuse, recurved, orange-yellow with three purple ridges, disk of lip with two raised ridges. *Column* pale pink.—*J. D. H.*

Fig. 1, Column; 2, anther; 3, pollen-masses:—*all enlarged.*

Tab. 7007.

CYPERORCHIS ELEGANS.

Native of the Mountains of Eastern Bengal.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Cyperorchis, *Blume*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 538.)

Cyperorchis *elegans*; caulibus cæspitosis brevibus foliosis basi demum subpseudobulbosis, foliis perplurimis elongato-loriformibus subtus carinatis, basibus truncatis persistentibus vix dilatatis distiche imbricatis demum brunneis, scapis interfoliaceis erectis teretibus primum vaginatis vaginis deciduis, racemo magno floribundo pendulo, floribus imbricatis pallide subsordide flavis, bracteis minutis subulatis, perianthio elongato subinfundibulari, sepalis linearioblongis erectis apicibus recurvis acutis, petalis consimilibus, labello erecto anguste cuneiforme 3-lobo, lobis lateralibus acutangulis, terminali linguiforme, disco inter lobos laterales alte bicarinato, carinis aurantiacis basin versus incrassatis.

C. elegans, *Blume Mus. Bot. Lugd. Bat.* vol. i. p. 48; *Orchid. Archipel. Ind* p. 93, t. 48 C.

Cymbidium elegans, *Lindl. in Wall. Cat.* No. 7354; *Gen. et Sp. Orchid.* p. 163; *Sert. Orchid.* t. 14.

Limodorum cyperifolium, *Hxm. mss.*

The genus *Cyperorchis* was established by Blume for the above plant, which was referred by Lindley to *Cymbidium*, with the remark (in his Sertum Orchidaceum) that it differs from the normal species of that genus in "the pollinia being pear-shaped, furrowed on the back and planted separately upon a transversely oval gland. In this respect the present species differs somewhat from other *Cymbidia*, but not sufficiently to deserve its being made into a distinct genus." This remark was founded upon the analyses of a native Indian artist, for which, and for the accompanying figure of the whole plant, Lindley was indebted for his description. The real characters whereby *Cyperorchis* is separated from *Cymbidium* is the form of the corolla.

Only two species of *Cyperorchis* are satisfactorily known, the present and the white-flowered fragrant *Cymbidium Mastersii*, Lindl. (in Bot. Reg. 1845, t. 50), to which Bentham (Gen. Plant. vol. iii. p. 538) doubtfully adds Lindley's *Cymbidium cochleare*, a native of Sikkim.

July 1st, 1888.

C. elegans is a Himalayan species; it was discovered by Wallich in 1821, in the forests of Nepal. I met with it in Sikkim at an elevation of 7000 feet, and in the Khasia Mountains at a lower elevation. Further east it has been found by Mr. C. B. Clarke on Kohima, a mountain in Munnepore, at an elevation of 5400 feet. The specimen figured was sent to the Royal Gardens, Kew, by Mr. Gustav Mann in 1885, and flowered in November, 1887.

Descr. *Stems* crowded, short, clothed at the base with the brown distichous equitant truncate bases of the old leaves, at length swollen and pseudobulbous. *Leaves* twelve to eighteen inches long, very numerous, recurved, strap-shaped, one-half to three-quarters of an inch in diameter, dark green above, grooved down the centre, paler keeled and striate beneath, tip minutely two-fid. *Scape* four to six inches long, arising from amongst the leaves, slender, erect, green, clothed with deciduous sheaths. *Raceme* six to ten inches long, pendulous, very many- and dense-flowered, cylindric-oblong, three to four inches in diameter; flowers imbricating, shortly pedicelled; bracts minute, subulate. *Perianth* one and a half inches long, rather funnel-shaped, dull yellow or straw-coloured. *Sepals* linear-oblong, erect, with acute spreading or recurved tips. *Petals* like the sepals. *Lip* as long as the petals, loosely embracing the column, narrowly wedge-shaped, three-lobed; lateral lobes very narrow, subacute, the inner margin sinuate; disk with two very close orange-coloured medial ridges that are swollen at the base of the lip, and do not extend to the midlobe; midlobe rather small, tongue-shaped, obtuse. *Column* slender. *Pollen-masses* pyriform, sessile on a large subquadrate gland.—*J. D. H.*

Fig. 1, Lip; 2, column; 3, anther; 4 and 5, pollen-masses :—*all enlarged.*

M.S. del. J.N. Hanhart lith.

Vincent Brooks Day & Son Imp

Tab. 7008.

TREVESIA palmata.

Native of the Eastern Himalaya, &c.

Nat. Ord. Avaliaceæ.

Genus Trevesia, *Visiani*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 912.)

Trevesia *palmata*; fruticosa, aculeata, ramulis novellis rufo-tomentosis et setosis, foliis amplis longe petiolatis ad v. infra medium palmatim v. digitatim 7–9-lobatis basi cordatis glabriusculis lobis lanceolatis acuminatis serratis v. lobulatis, petiolo sparse aculeato, paniculis amplis, bracteis caducis, umbellis multiradiatis.

T. palmata, *Visiani in Mem. Acad. Torin. Ser.* 2, iv. 262, *cum Ic.*; *Seem. Rev. Hed.* p. 77; *Kurz For. Fl. Brit. Burm.* vol. i. p. 539; *Clarke in Fl. Brit. Ind.* vol. ii. p. 732; *Boerlage in Ann. Jard. Buitenz.* vol. vi. p. 108, t. xii. f. 15.

Gastonia palmata, *Roxb. Hort. Beng.* p. 33; *Fl. Ind.* vol. ii. p. 407; *Lindl. Bot. Reg.* t. 894.

Gilibertia palmata, *DC. Prodr.* vol. iv. p. 256.

Hedera ferruginea & palmata, *Wall. Cat.* 4909 and 4910, *in part.*

Brassaiopsis confluens, *Seem. Rev. Hed.* p. 18 (leaves only).

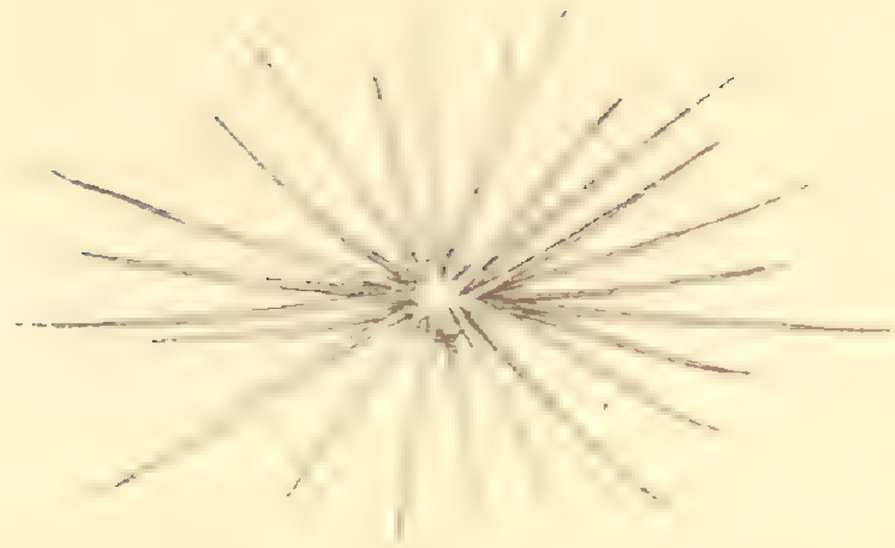
This is one of the most conspicuous features of the tropical jungles of the Central and Eastern Himalaya, Assam and the hot humid regions of the Khasia Mountains and Chittagong, where its slender stem crowned with terminal whorls of spreading, broad, fan-shaped, long-petioled leaves, rising above the herbaceous forest undergrowth, at once attracts attention. For the same reason it is a very efficient aid in the representation of a tropical region in a stove or heated house, where natural botanical features rather than showy flowers are the objects desired. It is widely distributed in India, from Central Nepal along the lower regions of the Himalaya westwards to Sikkim, Assam and the Khasia Mountains, and from thence southwards to Pegu. In the Malayan region it is represented by *T. sundaica* and other species.

J. G. Boerlage, working in the rich Malayan herbarium at Buitenzorg (Java), has in the Annals of the Buitenzorg Gardens, vol. vi. p. 97, revised the genus *Trevesia* and its allies, which were in a state of great confusion, owing to

the scanty material accessible in European herbaria. He confines *Treresia* to four species, of which *palmata* is the type, the others being the Javan *T. sundaica*, Miquel, *T. Burckii*, Boerlage (to which he refers *T. palmata*, var. *cheiantha*, Clarke in Fl. Brit. Ind.), and a new Sumatran species, *T. Beccarii*, Boerlage. Clarke's *T. palmata* var. *insignis* of the Khasia Mountains in India, he refers to the genus *Eschweilera*, Zipp., distinguished by the petioles being crested at the base and the pyrenes woody, and unites it to *E. insignis* (*Treresia insignis*, Miquel). *Eschweilera* seems to be founded on very slight characters, and I greatly doubt Clarke's Khasian *insignis* being the same with the *Eschweilera insignis* of Boerlage. *T. palmata* has long been cultivated in the Palm House at Kew, and is no doubt one of the earliest contributions from the Calcutta Gardens. It stands about five feet high, flowers every winter, and the flowers have a disagreeable heavy smell.

Descr. *Stem* five to twelve feet high, very slender, prickly, especially towards the tips of the very few erect branches, which are rufously tomentose and setose. *Leaves* crowded at the ends of the branches, one to one and a half feet in diameter, palmately or digitately five- to nine-lobed, coriaceous, sinuses rounded; lobes lanceolate, acuminate, serrate or lobulate; petiole one to one and a half feet long, prickly, base with a two-lobed stipulary sheath. *Panicles* long-peduncled, much shorter than the leaves, pubescent or glabrate; bracts oblong, obtuse, caducous; umbels six inches in diameter or less, long peduncled, many-rayed, puberulous; pedicels one and a half inches or less. *Flowers* one inch in diameter and less; calyx truncate, ten-toothed; petals usually six to ten, greenish white; disk and style yellow. *Stamens* six to ten. *Style* conic, grooved, stigma truncate toothed; ovary eight to ten-celled. *Fruit* subglobose, "size of a nutmeg, of a soft woody texture" (*Roxburgh*).

Fig. 1, Ovary; 2 and 3, petals; 4 and 5, stamens; 6, transverse section of ovary :—*all enlarged.*



M.S del, J.N.Fitch lith.

Vincent Brooks Day & Son Lith.

L Reeve & Co London.

Tab. 7009.

ECHINOCACTUS Haselbergii.

Native county unknown.

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Echinocactus, *Link & Otto*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 818.)

Echinocactus (Microgoni) *Haselbergii*; globosa v. oblata, pallide viridis, ob setas confertissimas argenteo-cana, tuberculis parvis convexis in seriebus innumeris dispositis convexis lævibus, areolis parvis albo-tomentellis, setis ad 20 gracillimis stellatim patentibus inæquilongis albis, interioribus erectioribus consimilibus, floribus ochraceo-rubris, perianthii tubo late campanulato setis fasciculatis suberectis basi pilosis instructo, laciniis ad 40, extimis 10–12 lanceolatis subacutis extus rubris intus ochraceis, interioribus consimilibus, intimis brevioribus, staminibus parvis brevibus confertis aureis, stylo columnari elongato, stigmatibus 6 erectis.

E. Haselbergii, *Forst. Handb. der Cacteen.* vol. i. p. 563.

This is a beautiful little species; the crossing of its stellate tufts of silvery spicular spines partially obscuring the pale-green surface beneath, which is studded with the white areolæ, gives the effect of seeing the latter through a transparent medium; and the play of light and shade as the little globe is turned round is very pretty. Nothing appears to be known of its native country, and the only published notice of it which I have seen is in Forster's valuable Handbook, where it is briefly described (without flower), under the above name, under *E. Scopa*, Link, with the observation that the specimen was in the collection of Dr. Von Haselberg of Stralsund, an eminent cultivator of *Cacti*, who procured it from the dealer, Ad. Haage, jun., of Erfurt. The specimen here represented was purchased from Hildmann of Berlin, and flowered in April of the present year. Though belonging to the same section as *E. Scopa*, it is a very different species in the form of the whole plant and of the perianth, as well as in the colour of the latter and its segments, which are acute and quite entire.

Descr. Globose or oblate, three inches in diameter, pale silvery grey from the copious spines. *Tubercles* small, convex, appearing almost vertically disposed in innumerable parallel series, but really spirally arranged, convex, pale

green and shining, crowned with a snow-white tuft of hairs, from which the spines spring. *Spines* about twenty, acicular, half an inch long, silvery and glistering, stellately spreading, of unequal lengths, the inner erect, hardly longer than the outer. *Flowers* sessile, one to one and a half inches in diameter; ochreous yellow and red; perianth broadly campanulate; tube short, red, covered with tufts of suberect spines, segments about forty, outer series about ten, lanceolate, acute, spreading and recurved, bright red, inner gradually smaller, orange or ochreous yellow, with acute red tips. *Stamens* included, yellow. *Style* exserted, stout; stigmas six, lanceolate, erect.—*J. D. H.*

Fig. 1, Tuft of spines; 2, front, and 3, side view of flower; 4, spines of tube of perianth; 5 and 6, stamens; 7, stigmas:—*all enlarged.*

M.S.del, J.N.Fitch lith.

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Tab. 7010.

SARCOCHILUS Hartmanni.

Native of Queensland.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Sarcochilus, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 575.)

Sarcochilus *Hartmanni;* foliis lineari-oblongis coriaceo-carnosis apice bidentatis medio carinatis, pedunculis foliis longioribus crassis suberectis, squamis sparsis carnosis brevibus ovatis obtusis instructis, racemis multifloris, bracteis brevibus triangularibus, pedicellis brevibus basique perianthii extus rubro-punctatis, sepalis petalisque consimilibus oblongis obtusis albis basi rubro-punctatis, labello brevissimo saccato, lobis lateralibus ovato-oblongis obtusis erectis, intermedio brevissimo obtuso, disco callo 2-lobo instructo.

S. Hartmanni, *Ferd. Muell. Fragment.* vol. viii. p. 248.

S. rubricentrum, *Fitzgerald in Gard. Chron.* 1880, p. 38, and in *Australian Orchids*, vol. ii. pt. i.

Thrixspermum Hartmanni, *Rchb. f. in Gard. Chron.* vol. vii. (1877) p. 716.

As a species, this appears to be very near indeed to *S. Fitzgeraldi*, F. Muell., but, as Mr. Fitzgerald points out, the habit is erect, and the very stout peduncles and racemes at once distinguish it. It is a native of mountain woods near Towomba, and at Cairns, in Queensland, where it was discovered by Mr. E. Ramsay, F.L.S. Our plant was received from Mr. J. F. Roberts, nurseryman, of Kew near Melbourne, in 1883, and it flowers annually in the cool Orchid House in the early spring.

Descr. *Stems* loosely tufted, short, stout, with very long strong aerial roots. *Leaves* three to five, two to five inches long, hard and fleshy, linear-oblong, tip obtuse or equally or unequally obtusely two-toothed, channelled down the middle, keeled at the back, light green. *Peduncle* as thick as a goose-quill, as long as or longer than the leaves, suberect, with a few distant fleshy ovate green bracts; raceme four to five inches long, laxly many-flowered; bracts small, triangular, persistent; pedicels a quarter of an inch and short ovary and base of perianth externally speckled with red. *Perianth* three-quarters of an inch in diameter;

sepals and petals subsimilar, spreading, oblong, obtuse, pure white with a few red specks or bars at the base. *Lip* very small, saccate, fleshy, lateral lobes falcately oblong, obtuse, erect; intermediate very short, conical, obtuse; disk with a fleshy two-lobed callus.—*J. D. H.*

Fig. 1. Lip and column; 2, lip; 3, column; 4, anther; 5 and 6, pollinia:—*all enlarged.*

Tab. 7011.

ARISTOLOCHIA Westlandi.

Native of China.

Nat. Ord. Aristolochiaceæ.

Genus Aristolochia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 123.)

Aristolochia (Siphisia) *Westlandi*; ramulis foliisque subtus pubescenti-tomentosis, foliis anguste oblongo-lanceolatis acuminatis basi cordatis superne nitidis, floribus amplis extus pedicelloque fusco-hirsutis, perianthii tubo cylindraceo bipollicari, limbo 6 poll. longo et lato ovato-rotundato ecaudato postice retuso; ore semilunari, columna staminifera 3-loba, lobis late ovatis diantheris marginibus dense villosis.

A. Westlandi, *Helmsley in Britten Journ. Bot.* vol. xxiii. (1885), p. 286.

Under his description of this plant, in the Journal of Botany, Mr. Helmsley observed, "The foliage of this is so like that of *A. longifolia*, that without flowers, one might regard it as a variety; but the flowers are nearly three times as large, and appear to be very different in shape, having a relatively shorter tube." *A. longifolia* is a Hong Kong species, of which a figure is given at Tab. 6884 of this work, taken from a plant that flowered at Kew the year following Mr. Helmsley's description of *A. Westlandi*, and an inspection of it fully justifies that botanist's remarks in all respects. It does not, however, solve what appears to me the doubtful point, that is, whether *Westlandi* may not represent a large-flowered race of *longifolia*, for the column, which Mr. Helmsley describes doubtfully as six-lobed, is truly three-lobed, and accords in size, number of anthers, their villous margins, conical summits, and all other particulars with that of *A. longifolia*, leaving nothing but the size of the perianth whereby to distinguish the two plants. Referring to the Herbarium, I find numerous native specimens of *A. longifolia*, and all are identical with the published figure cited above, and show no trace of an intermediate character; I therefore retain the two as representative species, of which the insular (*longifolia* of Hong Kong) is small-flowered, the continental (*Westlandi*) large-flowered. *A. Westlandi* is a native of

Tai-mo-Shan, on the mainland of China opposite to Hong Kong, where it was found by Mr. A. B. Westland. The Royal Gardens are indebted to Mr. Ford of the Hong Kong Botanical Gardens for Herbarium specimens, collected by its discoverer, and for a living plant which arrived in 1886, and flowered in the Victoria House at Kew in March of the present year. The flowers are produced at the base of the woody stem, as well as on the branches.

Descr. *Stem* woody, short; branches slender, climbing to a considerable height, pubescent. *Leaves* six to ten inches long, shortly petioled, narrowly oblong-lanceolate, acuminate, smooth and glabrous above, strongly nerved, pubescent and reticulate beneath; base cordate with rounded lobes; petiole half an inch long, stout. *Flowers* pendulous, chiefly from towards the base of the plant; peduncle one-flowered, three to five inches long, and as well as the perianth externally densely hirsutely villous with brown hairs. *Perianth-tube* two inches long below the very short flexure, cylindric, brown and yellow, part above the flexure shorter, hidden by the appressed perianth-limb, which is six by five inches, broadly rounded-ovate, obtuse anteriorly retuse posteriorly, slightly concave, pale greenish yellow with purple reticulated veins, densely speckled with dark vinous purple all over the centre, except the small white semi-lunar mouth. *Staminal column* short, subsessile, three-lobed; lobes shortly broadly oblong, with smooth broad conical tips; anthers in pairs, each pair surrounded by a densely tomentose fringe.—*J. D. H.*

Fig. 1, Interior of perianth-tube, showing the column; 2, column; 3, hairs of perianth:—*all enlarged.*

M.S. del, [illegible]

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Tab. 7012.

NARCISSUS PSEUDO-NARCISSUS, *var.* Johnstoni.

Native of Portugal.

Nat. Ord. Amaryllideæ.—Tribe Amarylleæ.

Genus Narcissus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 718.)

Narcissus (Ajax) *Pseudo-narcissus*, var. *Johnstoni;* bulbo subgloboso leviter oblato, foliis linearibus subpedalibus dorso late carinatis, scapo leviter ancipito, flore pedicellato sæpissime solitario, perianthii tubo anguste infundibulari limbo breviori, segmentis oblongo-lanceolatis citrinis flore expanso horizontaliter patulis, corona late infundibulari obscure hexagona segmentis æquilonga et concolori ore erecto leviter crenato, staminibus obscure biseriatis antheris ex tubo protrusis, stylo staminibus superante.

N. Pseudo-narcissus, *var.* Johnstoni, *Baker in Gard. Chron.* N. S. vol. xxv. (1886), p. 590; *Handb. Amaryll.* p. 3.

This is another curious Daffodil in addition to *N. cyclamineus* (Bot. Mag. t. 6950) which has been found in the neighbourhood of Oporto during the last few years by Messrs. Tait and Johnston. It is possible that it may be the *Oileus hexangularis* of Haworth (Monogr. p. 4), which is known only from the rough woodcuts of Rudbeck, Swertius and Parkinson. It has been suggested by Professor Henriquez that it may be a hybrid between some of the numerous varieties of *Pseudo-narcissus* and *triandrus*, but in all the numerous specimens which I have seen since it was first introduced into cultivation in 1886 the characters are substantially uniform. Our drawing was made from plants flowered in March in the Botanic Garden of Trinity College, Dublin, by Mr. F. W. Burbidge, and it also flowered at Kew about the same time from bulbs collected near Oporto by Mr. Peter Barr.

Descr. *Bulb* subglobose, slightly oblate, about an inch in diameter. *Leaves* about six to a bulb erect, slightly glaucous, about a foot long and one-third of an inch broad at the flowering time, shallowly channelled down the face, and furnished with a broad square keel down the back. *Peduncle* slender, faintly two-edged, rather shorter than the leaves. *Flower* usually single, drooping in bud, hori-

zontal or slightly ascending when expanded, spathe longer than the pedicel. *Perianth-tube* narrowly funnel-shaped, five-eighths of an inch long; limb pale lemon-yellow, an inch long; segments oblong-lanceolate, spreading horizontally when expanded. *Corona* as long as the segments, and uniform with them in colour; rim quite erect, obscurely crenate. *Stamens* obscurely biseriate, inserted one-third of the length of the perianth-tube above its base; anthers exserted from the tube. *Style* much overtopping the anthers.—*J. G. Baker.*

Fig. 1, Horizontal section of a leaf; 2, flower cut through vertically to show the insertion of the stamens; 3, style and vertical section of ovary: *all more or less enlarged.*

M. & del. J.N. Fitch lith.

Vincent Brooks, Day & Son Imp

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Tab. 7013.

SPATHOGLOTTIS Vieillardi.

Native of the Sunda Archipelago and New Caledonia.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Spathoglottis, *Blume;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 511.)

Spathoglottis (Elatiores) *Vieillardi;* elata, pseudobulbis demum fere nudis ovoideis, foliis 1–2-pedalibus elongato-lanceolatis sensim acuminatis creberrime costato-plicatis, scapo robusto vaginis paucis breviusculis instructo, floribus subcorymbosis, bracteis amplis late ovatis concavis, perianthio amplo, sepalis petalisque conformibus ovato-oblongis subacutis pallide lilacinis, labelli parvi lobis lateralibus erectis oblongis truncatis ochraceo-fuscis, terminali longe gracile stipitato trapeziforme v. late obcordato lilacino, callis ad basin loborum lateralium utrinque 2 aureis 2-lobis.

S. Vieillardi, *Reichb. f. in Linnæa*, vol. xli. p. 85.

S. Augustorum, *Reichb. f. in Lindenia*, vol. i. t. 25.

Spathoglottis Vieillardi was first made known by Dr. Reichenbach's description published in the Linnæa in 1877, taken from specimens collected between 1861 and 1867 in New Caledonia by the botanist whose services and name it deservedly commemorates. It had, however, been previously collected (in 1853) in the Isle of Pines (one of the same group) by Mr. MacGillivray, naturalist to Captain Denham's voyage to the Pacific, specimens from which source are in the Kew Herbarium. On the *Spathoglottis Augustorum* flowering at Kew, Mr. N. E. Brown recognized its identity with the previously published *S. Vieillardi*, and I am unable to detect any difference between the two plants. It is to be observed, however, that the Straits of Sunda, from whence *S. Augustorum* was sent by the two collectors, Auguste Linden and Auguste De Ronne, are very far from the New Caledonia Archipelago, and the presence of the same terrestrial orchid in such distant localities was hardly to have been anticipated. Apparently the same species has been collected in the Banda Islands by Mr. Moseley when on the "Challenge" Expedition in 1875. Mr. Linden states that the figure in

"Lindenia" represents a very poorly developed state of the plant, but except that the leaves are shorter and flowers a third larger, it accords in development with that here given, and with the Herbarium specimens. In both the raceme has only commenced flowering, for as flowering advances the raceme lengthens, and the lower part from which the flowers have fallen is clothed with the persistent deflexed imbricating bracts.

The specimen here figured was purchased in 1887 in Messrs. Protheroe and Morris' auction room. Mr. Watson informs me that it is the strongest and best grower of all the cultivated species of *Spathoglottis*. It flowered in the tropical Orchid House at Kew in September of last year.

Descr. *Pseudo-bulbs* two inches long, ovoid, at length nearly naked. *Leaves* one to two feet long, by two to two and a half broad, sessile, spreading and recurved, elongate-lanceolate, gradually acuminate, closely costate and plicate. *Scape* from the base of the pseudo-bulb, twelve to eighteen inches high, robust, terete, with three or four distant short appressed subacute herbaceous sheaths. *Raceme* at first corymbiform, lengthening to six inches; bracts one inch long, herbaceous, broadly ovate, subacute, concave; pedicels and ovary half to one and a half inches long, puberulous. *Perianth* two inches in diameter. *Sepals* and petals very pale lilac or nearly white, ovate-oblong, subacute. *Lip* about as long as the sepals; lateral lobes small, erect and incurved, subtruncate, orange-brown, with two large tumid orange calli speckled with red occupying the disk between them, and each callus produced at the base into a short spreading lobule; midlobe small, lilac, on a long slender stipes variable in form from trapeziform with rounded sides and an obtuse or acute tip, to very broadly obcordate. *Column* slender, incurved. *Pollinia* eight, with slender caudicles.—*J. D. H.*

Fig. 1, Flower with the sepals and petals removed; 2, column; 3, anther; 4 and 5, pollinia:—*all enlarged.*

Vincent Brooks Day & Son lith

L Reeve & Cº London.

Tab. 7014.

CARAGUATA Andreana.

Native of New Granada.

Nat. Ord. Bromeliaceæ.—Tribe Tillandsieæ.

Genus Caraguata, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 668.)

Caraguata *Andreana*; acaulis, foliis 20–30 ensiformibus pallide viridibus glabris flaccidis recurvatis, pedunculo rubro foliis bracteiformibus lanceolatis viridibus imbricatis, floribus 2–3-nis in paniculam laxam subspicatam dispositis, bracteis floralibus ovatis acutis rubris, calyce luteo sepalis oblongo-lanceolatis imbricatis, corollæ luteæ tubo cylindrico segmentis lingulatis tubo æquilongis, staminibus prope tubi oram insertis, stylo apice tricuspidato.

C. Andreana, *E. Morren in Rev. Hort.* 1884, p. 247, fig. 61; 1886, 276, with coloured figure; ***Baker in Synops. Tilland.*** **p. 5.**

The Caraguatas inhabit the West Indies and the mountains of Central America and the Andes. They closely resemble the Tillandsias, but the petals are united in a tube instead of being distinct down to the base. There are about a dozen species now known, which differ widely in size and inflorescence. The present plant was discovered by M. Edouard André, after whom it was named by Professor E. Morren, during his travels in South America in 1876 on the Cordillera of Pasto, in New Granada, and was introduced by him into cultivation. Our drawing was made from a plant purchased from M. Bruant of Poitiers, which flowered at Kew last April.

Descr. Acaulescent. *Leaves* twenty or thirty in a dense rosette, ensiform, thin, and pliable in texture, pale green, without any bands or lepidote scales, a foot and a half or two feet long, an inch and a half broad above the dilated base. *Peduncle* about a foot long, bright red; bract-leaves lanceolate, green, erect, imbricated. *Panicle* about a foot long, lax, subspicate, consisting of about ten clusters of two or three flowers, each subtended by a large green lanceolate branch-bract; flower-bracts ovate, acute, bright red, under an inch long. *Calyx* yellow, above an inch long; sepals oblong-lanceolate. *Corolla* bright yellow,

two inches long; tube cylindrical; segments lingulate, as long as the tube, not scaled at the base. *Stamens* nearly as long as the segments, inserted at the throat of the corolla-tube. *Ovary* ampullaform; style long, tricuspidate at the apex.—*J. G. Baker.*

Fig. 1, Portion of corolla, with stamens; 2, front view of anther; 3, back view of anther; 4, pistil:—*all enlarged.*

Vincent Brooks Day & Son lith.

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Tab. 7015.

MASDEVALLIA Mooreana.

Native of Venezuela?

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Masdevallia, *Ruiz et Pav.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 492.)

Masdevallia *Mooreana*; foliis petiolatis lineari-oblongis obtusis v. apice 2-lobis crasse coriaceis enerviis basi angustatis marginibus subrecurvis, scapis foliis brevioribus validis medio vaginatis, vagina tubulosa oblique truncata, floribus magnis, perianthii crasse coriacei, tubo lato mento obtuso, sepalo dorsali porrecto e basi late ovato triangulari in caudam validam bipollicarem sensim angustato, lateralibus ad mediam connatis dein in caudas elongatas productis, petalis pallidis oblongis cuspidatis, labello oblongo densissime papilloso luride purpureo.

M. Mooreana, *Reichb. f. in Gard. Chron. N. S.* xxi. (March, 1884), p. 408.

Masdevallia Mooreana belongs to a group of very closely allied forms of the genus of which the type of those known to me is the remarkable *M. elephanticeps*, Reichb. f. (Xen. Orchid. vol. i. t. 3; Flore des Serres, Ser. 1, vol. x. t. 997, and var. *pachysepala*, Xenia l. c. t. 74). To this *M. Gargantua*, Reichb. f. (in Gard. Chron. Ser. 2, vol. vi. (1876) p. 516), from New Grenada, and *M. velifera*, Reichb. f. (l. c. Ser. 2, vol. ii. (1874) p. 98, and Ser. 3, vol. i. (1887) p. 71, f. 516), also from New Grenada, are very near, and may prove to be varieties. Of these *M. elephanticeps* is much the largest species, with thickly fleshy flowers four inches long. *M. velifera*, from the figure and description and a dried flower in the Herbarium, is exceedingly close to *M. Mooreana*, but the lower sepals are united much further down, and are more strongly deflexed. *M. Gargantua* is in a dried state undistinguishable from *Mooreana* except by the lower sepals being, as in *velifera*, more connate.

M. Mooreana is believed to be a native of Venezuela, but I find no certain indication of its locality.

The Royal Gardens are indebted to Mr. Lee for the plant here figured, which flowered in March of the present year. Flowers have also been received at Kew from Mr. A. H.

Kent, under the name of *M. melanorantha*, Reichb. f., which according to the description must be a very different plant.

Descr. *Stems* tufted. *Leaves* four to six inches long, very coriaceous, linear-oblong, obtuse or minutely two-fid at the tip, nerveless, midrib stout at the back, deeply grooved in front, margins subrecurved, base narrowed into a stout petiole, one and a half to two inches long, clothed at the base with cylindric sheaths. *Scapes* one-flowered, shorter than the leaves, stout, purplish, sheathed at the base and middle; sheaths cylindric, obliquely truncate, membranous. *Flowers* horizontal or deflexed; ovary one-half to two-thirds of an inch long, cylindric, whitish, puberulous, speckled with red as is the perianth externally. *Perianth* three inches long, very coriaceous; tube two-thirds of an inch long by one-half of an inch in diameter, cylindric with a short rounded mentum. *Upper sepal* gradually narrowed from a triangular-ovate base into a long slender coriaceous tail, margined with yellow, speckled above with red, dirty white within with three red nerves; lower sepals connate to nearly the middle into a broadly ovate blade deep purple within, beyond the middle they are free and form slender tails like the dorsal sepals. *Petals* oblong, acute, white. *Lip* oblong, dark purple, and villous above. *Column* obtuse.—*J. D. H.*

Fig. 1, Flower with the sepals removed; 2, lip; 3, column; 4, anther; 5, pollinia:—*all enlarged*

M S.del, C.H.Fr[illegible]

Vi[illegible] Brooks, Day & Son[illegible]th

L[illegible] & Co. Lo[illegible]

Tab. 7016.

NARCISSUS Broussonnetii.

Native of Marocco.

Nat. Ord. Amaryllideæ.—Tribe Amaryllæ.

Genus Narcissus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 718.)

Narcissus (*Aurelia*) *Broussonnetii*; bulbo ovoideo, foliis synanthiis linearibus glaucescentibus, pedunculo compresso multifloro, pedicellis brevibus, perianthio hypocrateriformi albo, tubo pollicari deorsum cylindrico sursum anguste infundibulari, segmentis ovatis imbricatis, coronâ subnulla, staminibus distincte biseriatis filamentis brevibus, stylo antheris superante.

N. Broussonnetii, *Lag. Gen. et Sp.* p. 13; *Baker in Gard. Chron.* 1869, p. 1183; *Handb. Amaryll.* p. 12; *Burb. Narciss.* t. 47.

N. obliteratus, *Willd. inedit.*; *Schultes Syst. Veg.* vol. vii. p. 981.

Hermione obliterata, *Haw. Monogr.* p. 13.

Aurelia Broussonnetii, *J. Gay in Ann. Sc. Nat.* Ser. 4, vol. ix. p. 96; *Ball in Journ. Linn. Soc.* vol. xvi. p. 681.

This is a very curious plant. It is just like the white Tazetta Narcissi (*italicus*, *Panizzianus*, &c.) in habit, leaves, perianth, stamens and pistil, but the corona is very nearly or entirely obliterated. It was carefully studied by the late Jacques Gay, one of the most painstaking botanists who ever lived, and his conclusion was that it ought to be regarded as forming a monotypic genus. It was first found about the beginning of the century in the neighbourhood of Mogadore by Broussonnet. Nothing more was heard of it till 1873, when specimens were sent by Dr. Leared to the late Daniel Hanbury. Now it has been introduced alive, and was flowered last winter both at Kew and by Sir E. G. Loder at Floore. The Floore plant came into flower in November, that at Kew late in December. It will probably not prove hardy in the open air in England.

Descr. *Bulb* ovoid, the size of a hen's egg; tunics brown. *Leaves* linear, rather glaucous, contemporary with the flowers, finally a foot and a half long. *Peduncle* compressed, about a foot long. *Umbel* of six to nine flowers; pedicels short; spathe-valve ovate, scariose, much longer

than the pedicels. *Perianth* hypocrateriform, white; tube an inch long, cylindrical in the lower half, narrowly funnel-shaped in the upper; expanded limb above an inch in diameter; segments ovate, much imbricated, about half an inch long. *Corona* absent or very rudimentary. *Stamens* distinctly biseriate; three inserted at the throat of the tube, three below it; filaments short; anthers oblong. *Style* much overtopping the anthers; stigma capitate.—*J. G. Baker.*

Fig. 1, Half the perianth, opened; 2, front view of anther; 3, back view of anther; 4, pistil; 5, whole flower, complete:—*all more or less enlarged.*

M.S.del, C.H.Fitch lith.

Vincent Brooks, Day & Son lith.

L. Reeve & Co. London.

Tab. 7017.

ERYTHRONIUM Hendersoni.

Native of Oregon.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Erythronium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 819.)

Erythronium *Hendersoni;* cormo oblongo, foliis oblongis purpureo tinctis ad basin longe attenuatis, pedunculo elongato 1–2-floro, perianthio pallide lilacino, basi intus saturate vinoso-purpureo, segmentis interioribus exterioribus latioribus supra unguem brevem auriculatis, staminibus perianthio 2–3-plo brevioribus, ovario turbinato, stylo ovario æquilongo apice stigmatoso obscure tricuspidato.

E. Hendersoni, *S. Wats. in Proc. Amer. Acad.* (*Contr.* xiv.) vol. xxii. p. 479.

In the Old World we have only one species of *Erythronium*. For a long time three distinct species, with several varieties, have been known in America. In 1871, Dr. Asa Gray described the curious *E. propullans* from Minnesota, and last year Dr. Sereno Watson added three new species, the present plant, *E. Howellii* and *E. citrinum*, described from material obtained in Oregon by Messrs. Howell and Henderson. All the eight species are quite hardy, and resemble one another closely in habit and general appearance. They differ widely in the colouring of the flower, and in this respect the present plant comes nearer to the old European type than any of the others. Our drawing was made from a plant that flowered at Kew last April, which was obtained from the Harvard Botanic Garden.

Descr. *Corm* oblong, tunicated. *Leaves* two, opposite, produced a little above the base of the peduncle, oblong, dull green faintly spotted with purplish-brown, narrowed suddenly to a long channelled base. *Peduncle* slender, terete, six or eight inches long, bearing one or two drooping faintly-scented flowers. *Perianth* campanulate, about two inches in diameter when expanded, the segments reflexing from half-way down, pale lilac, spotted with dark purple at the base, the outer broader than the inner, and

furnished with a distinct auricle on each side at the top of the short claw. *Stamens* less than half as long as the perianth-segments; filaments lilac; anthers small, oblong. *Ovary* turbinate, trigonous; style as long as the ovary, obscurely tricuspidate at the stigmatose tip.—*J. G. Baker.*

Fig. 1. Outer segment of the perianth, with a stamen from its base; 2, inner segment of perianth; 3, a stamen; 4, pistil:—*all enlarged.*

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TAB. 7018.

HOWEA BELMOREANA.

Native of Lord Howe's Island.

Nat. Ord. PALMEÆ.—Tribe ARECEÆ.

Genus HOWEA, *Beccari*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 904.)

HOWEA *Belmoreana*; caudice elato, foliis 6–8-pedalibus, segmentis numerosis inearibus acuminatis plicato-3-nerviis patenti-recurvis marginibus rachique pentagono lanuginosis, spatha lineari-elongata longe rostrata sublepidota, spadice simplici crassa, floribus confertis basi fossis rachis inserta, masculis ovoideis, sepalis latis ciliolatis, petalis duplo longioribus ovatis acutis lævibus glabris, staminibus perplurimis stipite columnari insertis, filamentis brevibus, antheris lineari-oblongis, fructu oliviformi.

H. Belmoreana, *Beccari, Malesia*, vol. i. p. 66 (*Howeia*).

Kentia Belmoreana, *Moore & Muell. in F. Muell. Fragment.* vol. vii. p. 99, *cum Ic. xylog.*, and vol. viii. p. 234; *Ill. Hortic.* t. 191; *Benth. Fl. Austral.* vol. vii. p. 137.

Grisebachia Belmoreana, *Wendl. & Drude in Linnæa*, vol. xxxix. p. 202. t. iv. f. 1; *Drude & Wendl. in Nachricht. K. Geselsch. Wiss. Goett.* 1875, p. 58; *Drude in Bot. Zeit.* 1877, p. 636, t. 5, f. 14, 15.

The little group of Islands called Lord Howe's, which lies off the eastern coast of Australia in lat. 32° S., contains three genera of Palms, of which two are peculiar to the group. One of these, *Hedyscepe Canterburyana*, the Umbrella Palm of the colonist, is monotypic; the other, *Howea*, contains probably two species, which, however, have not as yet been satisfactorily diagnosed. These are *H. Belmoreana* and *H. Forsteriana*, of which Bentham in his Flora of Australia (under *Kentia Belmoreana*, vol. vii. p. 138) says that "the specimens, as far as they go, show no difference that I can discover in the male flowers and fruit, and the distinctness of the two, whether as varieties or species, remains to be ascertained." Mueller, he says, distinguishes two species, *Belmoreana* or "curly Palm," with the leaves converging upwards, and *Forsteriana*, or "thatch" or "flat-leaved Palm," with the segments hanging. If these characters hold good, the subject of the present plate would appear to be the *Forsteriana*, or thatch-leaf Palm, and not the true *Belmoreana*; but in the woodcut of the two species given by Mueller in his Fragmenta, the differences between them are hardly perceptible, the

segments of both hanging down except a very few at the base of the leaf of *Forsterianum*. Referring to the published figures of the flower and fruit of *Belmoreana*, they are identical with those of that here figured. Unfortunately there are no native or authentic foliage specimens of the two supposed species in the Kew Herbarium, though there are male flowers and fruits of both, received from Mueller, and which, as Bentham points out, are identical. There is, however a palm, said to be from Lord Howe's Island, and which is cultivated at Kew, and named (amongst other names) *H. Forsteriana*; it differs from *Belmoreana* in the much more slender and quite glabrous rachis of the leaf.

H. Belmoreana was sent from the Sydney Botanical Gardens to Kew about thirty years ago, and for long bore the name of the Umbrella Palm (*Hedyscepe Canterburyana*); it flowered for the first time in February of this year, the trunk being then twenty-four feet high.

Descr. *Trunk* slender, annulate, green, eighteen inches in girth at two feet from the ground. *Leaves* spreading and recurved, twelve feet long, petiole about one-sixth the length of the blade; segments sessile, three to four feet long by two inches broad, finely acuminate, spreading and drooping, dark green, plicately five-nerved and many-ribbed, margins densely woolly; nerves sparsely paleaceous; base sessile; rachis very stout, densely woolly, obtusely five-gonous, upper surface nearly flat between the bases of the segments. *Spadix* from the base of the old leaves, shortly peduncled, erect, about eighteen inches long, stout, terete, simple, rachis three-quarters of an inch in diameter. *Flowers* with their bases sunk in pits of the rachis, males one-third of an inch long, ellipsoid, obtuse; sepals broad, obtuse, ciliate, half as long as the oblong smooth valvate apiculate petals. *Stamens* very many, crowded on a central column, erect; filaments very short; anthers oblong, apiculate. *Fem. flowers* immature; ovary ovoid, stigmas three triangular. *Fruit* one and a quarter to one and a half inches long, ellipsoid, smooth, apiculate. *Seed* conform to the cavity, vessels of testa ascending and arched.—*J. D. H.*

Fig. 1, Male flower; 2, column and stamens; 3 and 4, stamens; 5, fem. flower; 6, ovary; 7, seed: 8, fruit cut longitudinally, showing the embryo:—*all except figs. 7 and 8 enlarged*.

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Tab. 7019.

RHODODENDRON Collettianum.

Native of Affghanistan.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 599.)

Rhododendron *Collettianum*; fruticosum, glabrum, ramulis furfuraceis, foliis breviter petiolatis elliptico-lanceolatis utrinque acutis subtus dense pallide lepidotis nervis obscuris, bracteis inflorescentiæ rotundatis coriaceis apiculatis ciliatis, floribus dense congestis albis, bracteis floralibus linearibus sepalisque oblongis obtusis villosis, corolla infundibulari 5-loba intus pubescente, lobis oblongo-ovatis obtusis, staminibus 10 tubo inclusis, filamentis pilosis, antheris parvis, ovario brevi, stylo brevi crasso, stigmate capitato breviter 5-lobo, capsula parva oblongo-ovoidea obtusa lepidoto-glandulosa sepalis membranaceis **vix duplo longiore.**

R. Collettianum, *Aitch. & Helms. in Journ. Linn. Soc.* vol. xviii. p. 75, t. xv. figs. 1–8, and vol. xix. p. 175.

An alpine Affghan *Rhododendron*, compared by its describers, Helmsley and Aitchison, as closely approaching the Himalayan *R. Anthopogon*, but differing in the larger size, straight flower, ten stamens, and corolla hairy all over within. To me it does not appear to be nearly allied to any known species, except its fellow-countryman *R. affghanicum*, Aitch. & Helms., which closely resembles it in foliage, inflorescence, and bracts, but which has a much shorter corolla with exserted stamens. The corolla of *Collettianum* is not (as described) salver-shaped, but funnel-shaped.

R. Collettianum was collected during the Kurrum Valley Expedition of 1879, by both Major Collett and Dr. Aitchison, on the Safed Koh and elsewhere in Affghanistan, at altitudes of 10,000 to 13,000 feet, where it commences at the upper limit of tree vegetation and forms thickets with masses of Juniper. It thus occupies a higher level than *R. affghanicum*, which affects rocks on the same mountains at 7000 to 9000 feet elevation. The plant here figured was raised from seed sent by Dr. Aitchison in 1880, and which flowered in the open rock-work of the Royal Gardens in May of the present year. The foliage

has the strong resinously aromatic odour that characterizes the alpine Himalayan species.

DESCR. A shrub eight to ten feet high, with nearly white spongy bark on the branches; branchlets furfuraceously-pubescent. *Leaves* two to three inches long, very coriaceous, elliptic-oblong or -lanceolate, acute at both ends, opaque above, clothed beneath with pale brownish lepidote scales; petiole one-eighth to one-half of an inch long. *Flowers* white, in dense terminal corymbs, shortly pedicelled, surrounded with short broad coriaceous lepidote apiculate ciliate scales; floral scales linear, obtuse, villously ciliate. *Sepals* five, subequal, oblong, obtuse, membranous, ciliate woolly and lepidote. *Corolla* nearly an inch long, funnel-shaped, pubescent within; lobes shorter than the tube, broadly oblong, tips rounded. *Stamens* ten, included within the tube of the corolla; filaments slender, hairy; anthers small. *Ovary* short, rounded, densely lepidote; style very stout with five large stigmatic lobes. *Capsule* a quarter of an inch long, shortly ovoid, obtuse, lepidote, almost twice as long as the persistent membranous sepals.—*J. D. H.*

Fig. 1, Portion of under-surface of leaf; 2, lepidote scale from do.; 3, calyx and bract; 4, corolla laid open; 5, stamen; 6, ovary:—*all but fig.* 1 *enlarged.*

7020.

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IRIS Alberti.

Native of Turkestan.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris *Alberti*; rhizomate breviter repente, foliis magnis ensiformibus parce glaucescentibus, capitulis pluribus laxe paniculatis, spathæ valvis magnis ovatis ad anthesin scariosis, floribus pulchre lilacinis brevissime pedicellatis, perianthii tubo brevi anguste infundibulari, segmentis exterioribus obovato-cuneatis recurvatis obscure cristatis conspicue barbatis, segmentis interioribus erectis orbicularibus distincte unguiculatis, cristis stigmatosis brevibus, antheris albis filamentis brevioribus.

I. Alberti, *Regel in Act. Petrop.* vol. v. p. 260; *Gartenfl.* t. 999.

This new Iris is one of the many novelties which have been discovered lately by the Russian collectors in the mountains of Turkestan. It was sent home alive to St. Petersburg by Dr. Albert Regel, after whom it was named by his father. The only wild specimen we possess in the Kew Herbarium was gathered by Felisson in 1877. In habit it most resembles *I. pallida* of our old familiar European types, and it has the same scariose spathe-valves. It is interesting botanically, because it possesses a rudimentary crest and a fully-developed beard down the claw of the outer segments of the perianth, so that it forms a connecting link between the sub-genera *Pogoniris* and *Evansia*. Our drawing was made from specimens furnished by Professor M. Foster, F.R.S. In England it flowers towards the end of May.

Descr. *Rootstock* stout, shortly creeping. *Leaves* ensiform, slightly glaucescent, one and a half or two feet long, above an inch broad. *Inflorescence* a lax panicle overtopping the leaves, with five or six heads; spathe-valves ovate, ventricose, the outer scariose at the flowering-time, except in the centre towards the base; pedicels very short. *Flowers* bright lilac; perianth-tube under an inch long, narrowly funnel-shaped, greenish; outer segments obovate-cuneate, reflexing, two inches long, under an inch broad,

faintly crested down the face more than half-way up, and densely bearded with white processes with a yellow head and veined on the sides up to the top of the beard with lines of dull brown and lilac on a white ground; inner segments erect, orbicular, above an inch broad, narrowed suddenly to a convolute claw half or three-quarters of an inch long. Crests of the *stigma* short, not reaching to the top of the beard. *Filaments* longer than the white linear anthers.—*J. G. Baker.*

Fig. 1, Front view of stamen; 2, back view of stamen; 3, stigma with its crests: —*all more or less enlarged.*

Tab. 7021.

DISA racemosa.

Native of South Africa.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Disa, *Berg* ; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 630.)

Disa (Vexillata) *racemosa* ; erecta, glaberrima, caule stricto gracili vaginato, foliis 4-6 radicalibus lineari-lanceolatis acuminatis, racemo laxe 4–9-flore, floribus subsecundis, bracteis late ovatis acutis ovario æquilongis, sepalis lateralibus late ellipticis obtusis, sepalo dorsali ovato obtuso concavo dorso infra medium tumido, petalis oblique oblongis apicibus incurvis columnæ basi adnatis, labello lineari acuto, columna dorso lamina petaloidea instructa, rostelli brachiis divaricatis apicibus glanduliferis.

D. racemosa, *Linn. f. Suppl.* p. 406; *Bolus in Trans. S. Afric. Phil. Soc.* (*ined.*).

D. secunda, *Swartz in Kongl. Vet. Acad. Handl.* xxi. 213; *Lindl. Gen. et Sp. Orch.* 348.

Satyrium secundum, *Thunb. Prodr. Fl. Cap.* 4.

I am indebted to Mr. Bolus, who is preparing at Kew a Monograph of the genus *Disa* (for publication in the Transactions of the South African Philosophical Society) for the characters and the following description of this beautiful plant. It is, as he informs me, a native of moist grassy places on the eastern side of Table Mountain, Cape Town, at elevations of 800 to 2500 feet, flowering in December and January, and it extends thence eastward to Grahamstown, where it has been found by Professor Mac Owan, now Superintendent of the Cape Botanical Gardens. It belongs to a section of the genus established by Mr. Bolus under the name of "Vexillata," in which the dorsal sepal is erect, nearly flat or slightly saccate; the petals inarched and subexserted; the lip usually narrow; the rostellum high, erect, protruded or reflexed, its arms usually divaricate, and the column itself is produced behind into a petaloid appendage which embraces the long narrow ascending or reflexed anther. This group contains four species.

D. racemosa was brought to the Royal Gardens from

the Cape by Mr. Watson, foreman of the propagation department, who visited that colony in 1887, and it flowered in May of the present year.

DESCR. Erect, glabrous, fifteen to thirty inches high; stem nearly straight, slender, distantly clothed with close wrapping sheaths with shortly spreading points. *Leaves* four to six, radical, linear-lanceolate, acuminate, laxly spreading. *Racemes* distantly four- to nine-flowered; flowers subsecund, deep rose-red; bracts broadly ovate, acute, erect, about as long as the ovary. *Lateral sepals* broadly elliptic, obtuse, mucronulate below the apex, spreading, about ten lines long, seven to eight lines wide; dorsal sepal ovate, concave, obtuse, bluntly and widely saccate behind just below the middle, about nine lines long and five in depth. *Petals* obliquely oblong, apex incurved, posterior margin erose, meeting and arching over the anther, adnate to the column at the base. *Lip* linear, acute, five lines long. *Column* erect or ascending; rostellum with divaricate arms, bearing the glands at their apices, furnished posteriorly with a petaloid appendage reaching half-way up, and closely embracing the anther; glands facing the front of the flower.—*H. Bolus.*

Fig. 1, Column and lip; 2, column, anther, and arms of rostellum; 3, pollinia:—*all enlarged.*

M.S.del, J.N.Fitch,lith.

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Tab. 7022.

ASARUM MACRANTHUM.

Native of Formosa.

Nat. Ord. Aristolochieæ.

Genus Asarum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 122.)

Asarum *macranthum*; foliis deltoideo-ovatis acutis subundulatis variegatis cordatis sinu lato, petiolo gracili elongato nervisque subtus sparse pilosis, floribus numerosis brevissime pedunculatis amplis, perianthii tubo late pyriformi, ore parvo disco elevato cupulari crasse carnoso plicato circumdato, limbi inæqualiter trilobi lobis foliaceis late ovatis obtusis marginibus lobulatis undulatisque, stigmatibus lineari-oblongis apicibus obtusis recurvis.

For this remarkable species of *Asarum* the Royal Gardens are indebted to Mr. Ford, Superintendent of the Hongkong Botanical Gardens, who in 1884 sent dried specimens of it from Kelung, a town on the north coast of Formosa, and in 1887 living plants, which flowered in May of this year. It was, however, discovered as long ago as 1864 in that same island by Mr. Richard Oldham, a collector sent out to Japan by Kew, and there are in the Kew Herbarium leaves of what appears to be the same plant collected in the interior of Amoy in China nearly opposite to Formosa by the late accomplished naturalist, Mr. R. Swinhoe. As a species *A. macranthum* differs remarkably from all hitherto known in the large size of the flowers and the dilated leafy undulate sepals, which are of a pale-brown colour with a tinge of yellow and purple, and are speckled all over. Another remarkable character is the very strong scent of Fenugreek (*Trigonella Fœnum-græcum*), which is preserved even in the dried state. Its nearest congener is *A. Thunbergii*, A. Braun, figured at Tab. 4933 of this work.

Descr. *Leaves* long-petioled, four to five inches long and as broad, deltoidly ovate, acute, base cordate, sinus broad deep, auricles rounded, pale green above and clouded with greenish-yellow, beneath very pale with five strong pink nerves and lax reticulations; petiole four to eight inches, slender, mottled with red streaks, as are the

nerves beneath, and both have scattered hairs. *Flowers* very numerous, shortly peduncled, two and a half inches in diameter. *Perianth-tube* broadly turbinate, two-thirds of an inch long, smooth, externally lacunose, internally the lacunæ answer to cavities in the tissue of its walls; mouth of perianth small, with a pendulous velum, at the base of a deep black purple cup, the lips of which form a deep rim with inverted edges round the mouth of the cup, and are strongly plaited on the inner surface; lobes of the perianth three, unequal, nearly an inch long, very broadly ovate with rounded tips and deeply undulate margins. *Filaments* very short; anthers oblong, cells on the margin of a thick shortly produced and two-lobed connective. *Styles* very stout; stigmas linear-oblong, decurved, with recurved rounded tips.—*J. D. H.*

Fig. 1. Bract; 2, flower (of the natural size); 3, section of perianth-tube and cup, showing the deflexed velum; 4 and 5, stamens; 6, styles and stigmas:—*all but fig. 2 enlarged.*

M. S del. J.N Fitch Lith

Vincent Brooks, Day & Son Imp

TAB. 7023.

PHAIUS WALLICHII.

Native of the East Indies.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus PHAIUS, *Loureiro*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 512.)

PHAIUS (Genuini) *Wallichii*; elatus, foliis late elliptico-lanceolatis acutis v. acuminatis, scapo aphyllo vaginato, racemo laxifloro, bracteis oblongo-lanceolatis acuminatis, sepalis petalisque patentibus lanceolatis longe acuminatis, labelli tubo amplo elongato, limbi oblongi acuti v. acuminati marginibus recurvis crispatis, calcare gracili incurvo.

P. Wallichii, *Lindl. in Wall. Pl. As. Rar.* vol. ii. p. 46. t. 158; *Gen. et Sp. Orchid.* p. 126; *Reichb. f. in Walp. Ann.* vol. vi. p. 459.

P. bicolor, *Lindl. Gen. et Sp. Orchid.* p. 128; *Sert. Orchid.* t. 23; *Bot. Mag.* t. 4078; *Wight Ic.* t. 1659–1660; *Reichb. f. l. c.* 158; *Thwaites Enum. Ceyl. Pl.* 300.

P. grandifolius, *Lindl. in Wall. Cat.* 3747 (*nec Lour.*).

Phaius Wallichii is one of the stateliest of orchids, and at the same time one of the largest-flowered. It has a wide distribution in India, from the Nepal forests, in the tropical region, eastwards in the lower Himalaya to Assam, the Khasia Mountains and southward to Burma; and it occurs (as *P. bicolor*) in Ceylon, but has not hitherto been found in the Madras Peninsula. The flowers vary greatly in colour, from the chocolate-brown of the plant here figured to pale primrose-yellow, and the sepals and petals are sometimes concolorous on both surfaces, at others the sepals are green on the back. The lip is less variable in colour, having the tube yellow in the basal half, dull reddish beyond it; the limb is white, with yellow or red (or both) ridges on the disk. The limb of the lip varies greatly in breadth, and is either truncate and apiculate or acute or acuminate. I find no character whatever whereby to distinguish the Cingalese *P. bicolor*, which is generally described as having flowers yellow tinged with red; but in a drawing of it by Mrs. Walker, the colours are nearly the same as those of *P. Wallichii*, as they are in the figure in this work (Plate 4078), except that the backs of the sepals

are green. Wight's figure of *P. bicolor* (Ic. Pl. Ind. Or. t. 1659-1660) confirms the identification.

The nearest ally of *P. Wallichii* is the long-cultivated *P. grandifolius*, Lour. (Bletia Tankervilliæ, *Br.*, see Plate 1924 of this work), of China, which, though now far surpassed by *P. Wallichii*, was in my younger days considered to be the finest orchid in cultivation. It has smaller flowers, less acuminate sepals and petals, and a much shorter obtuse spur. It is perhaps as variable in colour, and the *P. Blumei*, Lindl. (Limodorum Incarvillei, *Blume*), a plant described from cultivated specimens in Java, is probably a yellow-flowered variety of the same, for a primrose-yellow variety of it is figured in this work (Plate 6032) from Australia, and under the description that accompanies the plate, I have recorded Dr. Reichenbach's opinion that *P. grandifolius*, *Blumei* and *Wallichii* might be regarded as sub-species of one. Be this as it may, *P. Wallichii* is more different from *P. grandifolius* than the latter is from *Blumei*.

P. Wallichii has been long in cultivation in England, but never figured in so fine a form as that here represented, which was sent to Kew from Assam by Mr. C. B. Clarke, F.R.S., in 1886, where it flowered in May of the present year.

Fig. 1, Column and spur; 2, anther; 3 and 4, pollinia :—*all enlarged.*

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TAB. 7024.

PEUMUS FRAGRANS.

Native of Chili.

Nat. Ord. MONIMIACEÆ.

Genus PEUMUS, *Pers.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 141.)

Peumus fragrans, *Pers. Ench.* vol. ii. p. 269.

P. Boldu, *Molini Sagg. Stor. Nat. Chil.* 185, 350; *Feuill. Obs. Pl. Peruv.* vol. iii. p. 11, t. 6; *Benth. & Trim. Med. Pl.* vol. iii. p. 217.

Boldea fragrans, *Juss. in Ann. Mus.* vol. xiv. p. 134; *Tulasne Monogr. Monim.* p. 410.

Boldoa fragrans, *Lindl. in Bot. Reg.* 1845, t. 57; *C. Gay Fl. Chil.* vol. v. p. 353.

Ruizia fragrans, *Ruiz & Pav. Fl. Peruv. Prodr.* p. 135, t. 39; *Syst. Fl. Peruv.* p. 266-268; *Endlich. Iconogr.* f. 21; *Lindl. Veg. Kingd.* p. 298, f. 205.

A plant of no beauty, but worthy of cultivation from the delicious fragrance of its foliage and wood, and much valued in Chili for the manufacture of charcoal, which is regarded as superior to that made of any other wood of the country. The aromatic fruits are eaten; they attain the size and appearance of black haws, and the bark is used for tanning purposes. It has a wide range on the Chilian coast and interior, from Concepcion to Valdivia. The dried leaves and twigs have been introduced into some pharmacopœias, being a reputed stimulant and promoter of digestion, acting principally on the liver.

Peumus fragrans forms a bushy small tree in the Temperate House at Kew, flowering in the winter months; the male plant alone is in cultivation.

DESCR. An evergreen shrub or small tree, attaining a height of twenty feet, branches slender, spreading. *Leaves* in opposite decussating pairs, one to two inches long, very shortly petioled, broadly elliptic-oblong, obtuse, deep green, glandular, scaberulous on the upper surface, pale on the lower with raised reticulating nerves. *Flowers* white, in small terminal sessile cymes, diœcious, green. MALE FL. *Perianth* half an inch in diameter, very broadly campanulate, ten to twelve-lobed; lobes imbricate

in two series, the outer subherbaceous, short, broadly ovate, obtuse, reflexed; inner membranous, linear-oblong, obtuse, waved or twisted. *Stamens* very many, inserted on the disk in many series, filaments two-glandular below the middle, hairy below the glands which are stipitate; anthers small two-celled, cells dehiscing longitudinally. *Pistillode* 0. FEM. FL. much smaller than the male; perianth dehiscing circumscissly at the base; lobes small, often unequal. *Staminodes* few, small. *Carpels* several, sessile in the base of the perianth, ovoid, tomentose, narrowed into an acute stigma; ovule solitary, pendulous, anatropous. *Drupes* one to five, small, stipitate. *Seed* pendulous, albumen copious; cotyledons broad, divaricate.—*J. D. H.*

Fig. 1, Front, and 2, back view of male flower; 3 and 4, stamen; 5, portion of fem. cyme from Herbarium specimens; 6, flower; 7, carpels; and 8, drupes, all from the same :—***all but fig. 5 enlarged.***

A

B

1

2

M. S. del. C. H. Fitch lith.

Vincent, Brooks, Day & Son Imp.

Tab. 7025.

IRIS Korolkowi.

Type and var. concolor.

Native of Turkestan.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (Pogoniris) *Korolkowi*; rhizomatosa, foliis basalibus ensiformibus glaucescentibus subpedalibus, caule monocephalo subpedali, spathæ valvis maximis oblongo-lanceolatis ad anthesin viridibus, pedicellis brevibus, ovario linearioblongo angulato, perianthii tubo cylindrico subunciali, limbo albido venis perspicuis brunneis decorato, segmentis exterioribus obovato-cuneatis infra medium reflexis ungue barbato, segmentis interioribus erectis obovato-unguiculatis, styli cristis latis crenatis, fructu magno anguste oblongo ad apicem angustato. (Tab. 7015 A.)

I. Korolkowi, *Regel Enum. Plant. Nov. Turkest.* p. 32; *Gartenflora*, vol. xxii. (1873), p. 225, tab. 766; *Baker in Journ. Linn. Soc.* vol. xvi. p. 145.

Var. *concolor*; floribus lilacino-purpureis venis inconspicuis (Tab. 7015 B).

This very distinct Iris was discovered in Turkestan about 1870, by the collector whose name it bears. It was imported into England from St. Petersburg by Mr. William Bull in 1874, but is still very little spread in English collections. We received the fruit in 1876, grown by Max Leichtlin at Baden-Baden. The type is most like *I. iberica* in the colouring of the flower, but in the habit of growth and character of the beard it approximates to *I. biflora* and *lutescens*. Dr. Foster's concolorous purple variety is now published for the first time, and of course, for garden purposes, is very distinct from the type. The species was flowered both at Cambridge and Kew in the month of May this present year.

Descr. *Rhizome* shortly creeping. *Basal leaves* ensiform, glaucous, a foot long at the flowering time, an inch broad. *Peduncle* one-headed, about a foot long, bearing a single reduced leaf below the middle. *Head* usually two-flowered; outer spathe-valves very large, oblong-lanceolate, four or five inches long, green at the flowering time, pedicels short. *Ovary* linear-oblong, strongly angled, above

an inch long. *Perianth-tube* cylindrical, an inch long; limb in the type milk-white, distinctly veined with chocolate-brown, three inches long; outer segments obovate-cuneate, reflexing from below the middle, the brown claw furnished with a beard of brown hairs with white tips; inner segments erect, obovate-unguiculate, equal to the outer in length, a little broader. *Style-crests* ovate-deltoid, half an inch long, white, with brown veins. *Capsule* above two inches long, strongly angled, narrowed gradually to the point.

Var. *concolor*, Foster (fig. B), is a fine variety, with almost concolorous bright lilac-purple flowers.—*J. G. Baker.*

Fig. A, the type; B. var. *concolor*, *both life-size*; fig. 1, an anther of var. *concolor*; 2, top of style of the same, with its crests, *both enlarged*.

M.S.del, C.H.Fitch lith

Vincent Brooks, Day & Son Imp

Tab. 7026.

CALANTHE striata.

Native of Japan.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Calanthe, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 520.)

Calanthe *striata*; foliis petiolatis plicato-nervosis elliptico-lanceolatis acuminatis, scapo elato, racemo multifloro, bracteis subulatis, floribus 1½–2 poll. latis, sepalis petalisque patentibus pallide cinnamomis aureo-marginatis extus aureis, apicibus acutis recurvis, sepalo dorsali oblongo lateralibus oblongo-lanceolatis, petalis paullo angustioribus, labello tripartito albo, lobis æquilongis lateralibus orbiculatis acinaciformibus v. semi-ovatis sæpe falcatis, intermedio cuneato-obcordato truncato lobulato v. 2-lobo, disco trilamellato lamellis aureis, calcare gracili incurvo sepalis dimidio breviore, columna puberula, anthera obtuse rostrata.

C. striata, *Brown in Bot. Reg.* t. 573, *in note*; *Lindl. Gen. et Sp. Orchid.* p. 251; *Fol. Orchid. Calanthe*, p. 9; *Maxim. Mel. Biol* pt. viii. p. 641; *Miquel Ann. Mus. Lugd. Bat.* vol. ii. p. 204; *Franch. & Sav. Enum. Pl. Jap.* vol. ii. p. 34.

C. bicolor, *Lindl. Sert. Orchid.* sub t. 9.

Limodorum striatum, *Banks Ic. Kæmpf.* t. 2.

A native of Japan, where first made known by Kæmpfer, through the series of drawings of Japanese plants, which having been acquired by the British Museum, were published by Sir Joseph Banks, under the title of "Icones Kæmpferianæ." It is closely allied to another Japan species, *C. discolor*, Lindl. (Sert. Orchid. sub t. 9; Bot. Reg. 1840, t. 55), which differs in the smaller size and purplish sepals and petals, and the deeply two-lobed midlobe of the lip. None of these characters appear, however, to hold good; the flowers of both vary greatly as to colour, and the midlobe of the lip is also very variable. Franchet and Maximovicz both attribute the separate figures of flowers in Kæmpfer's figure to *discolor*, but they clearly represent those of *striata*, as indeed Kæmpfer intends they should, being truncate and obscurely or irregularly lobulate, whereas Lindley's figure of *C. discolor* represents two rounded segments with a sinus reaching nearly to the base of the midlobe itself. Franchet indeed says that intermediates exist between *striata* and *discolor*.

November 1st, 1888.

C. striata has been found by all collectors in the woods near the town of Nagasaki, and by some at Kanagawa; and is supposed to be not unfrequent in the Archipelago in mountain forests.

For this beautiful plant the Royal Gardens are indebted to Mr. Moore of Glasnevin; it flowered in the cool Orchid House in March of this year. It came under the name of *C. Sieboldii*, which is one of the many forms of *striata*.

Descr. *Stem* one to six inches, formed of the sheaths surrounding the bases of the leaves, which are green, tubular, obtuse and strongly ribbed. *Leaves* six to ten inches long, elliptic-lanceolate, acute, plicately five- to seven-nerved, sessile on their sheaths, or narrowed into a petiole which is sometimes eight inches long. *Scape* together with the raceme eighteen inches long, stout, erect; flowers loosely racemed, one and a half to two and a half inches in diameter; bracts small, lanceolate; pedicels three-quarters of an inch long. *Sepals* and *petals* spreading, with acute recurved tips (in the Kew specimen), cinnamon-brown with golden edges internally, externally golden yellow; dorsal sepal the largest, oblong, lateral oblong-lanceolate; petals rather narrower. *Lip* rather longer than the sepals, white or pale yellow, three-partite, lobes of nearly equal length, lateral very variable in form, semi-ovate, orbicular or hatchet-shaped, obtuse, wing-like, midlobe cuneately obcordate, with three erect lamellæ edged with red along the disk reaching nearly to the apex, and rising towards the base of the lip into three oblong tubercles. *Spur* slender, incurved, about half as long as the sepals if straightened out, white. *Anther* with a straight obtuse horn. *Column* very short, puberulous.—*J. D. H.*

Fig. 1, Flower with sepals and petals removed; 2, column and base of lip; 3, anther; 4, pollinia:—*all enlarged.*

M.S. del, C.H. Fitch lith.

Vincent Brooks Day & Son Imp

Tab. 7027.

AGAVE Elemeetiana.

Native of Mexico.

Nat. Ord. Amaryllideæ.—Tribe Agaveæ.

Genus Agave, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 738.)

Agave (Littæa) *Elemeetiana*; acaulis, foliis 20–25 carnoso-coriaceis dense rosulatis oblanceolatis ad apicem sensim angustatis glaucescentibus margine integris apice haud pungentibus, pedunculo foliis vix longiore, bracteis inferioribus productis, superioribus adpressis scariosis lineari-subulatis basi dilatatis, floribus in racemum densum cylindricum dispositis in bractearum axillis geminis pedunculo communi obsoleto, pedicellis ovario æquilongis, perianthii tubo brevi cylindrico, limbo campanulato pallide luteo segmentis oblongis, staminibus limbo 3–4-plo longioribus, fructu oblongo-trigono pro genere parvo.

A. Elemeetiana, *Jacobi Monogr.* pp. 178, 313; *Baker in Saund. Ref. Bot.* t. 163; *in Gard. Chron.* 1877, pt. ii. p. 748, fig. 145; *Handb. Amaryllid.* p. 193.

This species differs from all the other Agaves except *A. attenuata*, Salm Dyck (*A. glaucescens*, Hook. in Bot. Mag. tab. 5333), in having entire broad soft leaves, and from that species in being monocarpic. The Agaves of this soft-leaved series are less hardy than the Americanæ and Marginatæ. Fortunately the present plant produces seeds copiously in cultivation, so that there is no danger of its being lost. It was introduced from Mexico about 1864, and was named by Jacobi after M. Jonghe Van Elemeet, whose fine collection of succulent plants was dispersed in 1873. It was first flowered in 1867 by Mr. Wilson Saunders, who received it from Chiswick. We have had it at Kew for many years, and flowered it several times. Our drawing was made from a plant at Kew in May, 1888.

Descr. Acaulescent. *Leaves* twenty or twenty-five in a dense rosette, oblanceolate, one and a half or two feet long, four to six inches broad above the middle, narrowed gradually to a non-pungent tip and to three inches above the dilated base, soft in texture, persistently glaucous, nearly flat on the face and back in the lower half, entirely

destitute of marginal teeth. *Peduncle* not much longer than the leaves; lower bract-leaves elongated, upper scariose, linear-subulate from a dilated base. *Flowers* very numerous, forming a dense cylindrical raceme, which is sometimes eight or ten feet long, arranged in pairs in the axils of the bracts, without any common peduncle; pedicels half an inch long. *Perianth* with a very short cylindrical tube above the ovary; limb campanulate, pale yellow, half or three-quarters of an inch long; segments oblong. *Stamens* inserted at the base of the perianth-segments, above two inches long. *Style* finally overtopping the anthers. *Capsule* oblong-trigonous, half an inch long. —*J. G. Baker.*

Fig. 1, Flower, *life-size*; 2, front view of anther; 3, back view of anther, *both enlarged.*

1.
2.

TAB. 7028.

BEGONIA SCHARFFII.

Native of South Brazil.

Nat. Ord. BEGONIACEÆ.

Genus BEGONIA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 841.)

BEGONIA *Scharffii*; elata, robusta, hispido-pilosa, ramis petiolis pedunculis pedicellisque sanguineis, foliis amplis oblique ovato-cordatis acuminatis sinuato-dentatis, lobis basalibus rotundatis sinu acutissimo supra saturate viridibus subtus sanguineis, nervis validis subtus prominentibus, stipulis brevibus triangularibus viridibus, cymis multifloris, bracteis parvis ovatis, floribus amplis albis, *masc.* majoribus sepalis orbicularibus, petalis anguste obovato-spathulatis, staminibus in globum parvum dispositis, antheris lineari-oblongis obtuse apiculatis filamentis longioribus, *fl. fem.* sepalis 5 dorso setosis late ellipticis obtusis, styli 3 ramis spiraliter tortis, ovario pilis sanguineis dense hispido **3-loculari, placentis integris v. 2-fidis.**

The magnificent species here figured is an example of the great difficulty of classifying the species of the vast genus to which it belongs, for in having both entire and bifid placentæ, sometimes even in the same ovary, it vitiates one of the very best characters hitherto employed for forming the great groups of *Begonia*. If it is to be regarded as normally having bifid placentas, it is referable to A. De Candolle's section *Begoniastrum* (Prodr. xv. i. 292), and would be included in that botanist's third division of the group, in which the sepals are hispid externally with coloured hairs, but that division is further characterized by having either peltate or palmate leaves. If, on the other hand, the placentas are to be regarded as normally undivided, it would be referable technically to the section *Ewaldia*. On the whole I am disposed to refer it to *Begoniastrum*, because of its obvious affinity with *B. Schmidtiana* (Regel, Gartenflora, vol. xxviii. (1879) p. 321, t. 990), which is also a native of South Brazil, and is referred by its author to *Begoniastrum*. By a curious coincidence the latter plant bears the name of a member of the eminent firm of Horticulturists by which *B. Scharffiana* was introduced. *B. Schmidtiana* differs in its glabrous ovary.

Messrs. Haage and Schmidt inform me, that mixed with the seed of the plant here figured, were those of two other

species or varieties. Of the three one has produced a noble plant of dwarf habit fifteen to eighteen inches high; another is a plant three to three and a half feet high, with smaller male flowers, but no pollen; the third has the habit of the first, but is smaller, like a starved form. In the same letter Messrs. H. and S. request that the first or second should bear the name of the discoverer of all, Herr D. Scharff.

Begonia Scharffiana was introduced by Miss Haage and Schmidt from the Peninsula of Destierro in the Island of St. Catherine, S. Brazil, and is possibly a native of the Sierra de Catherina in the interior of the province of that name. It is one of the most magnificent species of the genus. The Royal Gardens are indebted to the importers for the plant from which our figure was taken. It flowered for the first time in September, 1887, producing female flowers; these were followed in October by male flowers and female buds, and in November again by another crop of male flowers.

Descr. Whole plant hispid with red leaves. *Stem* one to one and a half feet high, branched; branches, leaves beneath, petioles, peduncles and pedicels blood-red, patently hairy. *Leaves* a foot long and more, very obliquely ovate-cordate with rounded lobes and an acute sinus, acuminate, sinuate and very obtusely toothed, hairy on both surfaces, dark green above with impressed reddish nerves; stipules short, triangular-ovate, green. *Cymes* large, unisexual, much branched, many-fld.; bracts small, ovate-lanceolate, brown, deciduous; flower white with a few red hairs on the back of the sepals. *Male fl.* two and a half inches in diameter; sepals orbicular, coriaceous. *Petals* small, narrowly spathulate, obtuse. *Stamens* forming a small globose mass; anthers linear-oblong, obtusely apiculate, longer than the filament. *Fem. fl.* one and a half to one and three-quarters of an inch in diameter; sepals subequal, broadly elliptic, obtuse. *Ovary* densely hispidly villous with long red hairs, three-celled; styles large, the twisted arms stout, resembling small spiral shells; placentas simple or two-fid in separate or the same ovaries.—*J. D. H.*

Figs. 1 and 2, Back and front view of stamen; 3, ovary and styles; 4, transverse section of do.:—*all enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son. Imp.

L. Reeve & Co. London.

Tab. 7029.

IRIS Suwarowi.

Native of Central Asia.

Nat. Ord. Irideæ.—Sub-order Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (Pogoniris) *Suwarowi*; rhizomatosa, foliis linearibus glaucis falcatis pedalibus, pedunculo monocephalo subpedali, spathæ valvis exterioribus oblongo-lanceolatis ventricosis ad anthesin viridibus, ovario subcylindrico breviter pedicellato, perianthii tubo cylindrico ovario æquilongo, segmentis luteo-viridibus crebre rubro-purpureo lineatis, exterioribus oblongo-cuneatis supra medium barbatis, interioribus oblongis longe unguiculatis, unguе sæpe sed haud semper leviter barbato, styli cristis deltoideis crenulatis, antheris linearibus filamento brevi.

I. Suwarowi, *Regel Descr. Plant. Nov.* fasc. x. p. 45; *Gartenfl.* vol. xxxv. (1886) p. 397.

I. lineata, *Foster*; *Regel Gartenfl.* vol. xxxvi. (1887) p. 201, t. 1244, figs. 1–6.

This is another very distinct Iris, which has lately been discovered in Central Asia. Our single wild specimen in the Kew herbarium was gathered by Dr. Albert Regel in Turkestan in June, 1885. It was flowered by Max Leichtlin at Baden Baden in 1886, and both at Kew and by Professor Foster in May, 1888. The various specimens show a considerable range of variation, and it seems quite clear now that *Iris lineata* of Foster is a mere form of the original *Suwarowi*. Botanically the species is interesting, because it varies in the presence or absence of a beard down the claw of the inner segments of the perianth. I am quite prepared now to admit, what Professor Foster has for some time maintained, that it is not desirable to keep up *Hexapogon* as a section of the genus *Iris* distinct from *Pogoniris*.

Descr. *Rhizome* short, creeping. Produced *leaves* generally three on a side, linear, falcate, very glaucous, finally a foot long, a quarter of an inch broad. *Peduncle* one-headed, a foot long, bearing two or three much-reduced leaves. Outer *spathe-valves* oblong-lanceolate, acute, ventricose, green at the flowering time, two or two and a half

inches long. *Ovary* subcylindrical, shortly pedicellate, under an inch long; perianth-tube cylindrical, greenish, as long as the ovary: limb two inches long; segments closely veined with oblique lines of claret-purple on a greenish-yellow ground: outer oblong-cuneate, half an inch broad, with a distinct lilac-blue beard, reaching more than half-way up; inner segments oblong, with a long claw, which is frequently, but not always faintly bearded. *Style* an inch long, including the deltoid crenulate crests. *Anthers* linear, half an inch long, much exceeding the filament.—*J. G. Baker.*

Figs. 1 and 4, inner segments of the perianth, from two different plants, *life-size*: 2, anther, front view; 3, anther, back view; 5, top of style, with crests:—*all enlarged.*

M. & N. del. J.N. Fitch lith.

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Tab. 7030.

PENTAPERA sicula.

Native of Sicily, Cyprus and Cyrenaica.

Nat. Ord. Ericaceæ.—Tribe Ericeæ.

Genus Pentapera, *Klotzsch*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 589.)

Pentapera *sicula*: fruticulus erectus ramosus viscido-puberulus, foliis quaternis patulis linearibus obtusiusculis marginibus recurvis, floribus terminalibus subcorymbosis nutantibus, bracteis linearibus pallidis, calyce 5-partito, sepalis lineari-oblongis obtusis, petalis utrinque pubescentibus, corollæ majusculæ tubo ovoideo-urceolato tennissimo puberulo, limbi lobis 5 rarius 4 late ovatis recurvis, staminibus 5 rarius 4 inclusis, filamento complanato geniculato, antheræ basi dorso affixæ muticæ profunde 2-fidæ loculis paullo divaricatis, ovario 5-loculari pubescente, stylo glabro, stigmate capitato.

P. sicula, *Klotzsch in Linnæa*, vol. xii. p. 497; *Benth. in DC. Prodr.* vol. vii. p. 613; *Link, Klotzsch & Otto, Ic. Pl.* vol. iii. t. 19.

Erica sicula, *Gussone Prodr. Fl. Sic.* vol. i. p. 463, and *Fl. Sic. Synops.* vol. i. p. 447.

The genus *Pentapera* was founded by Klotzsch on the only known species of *Erica* in which the flowers are pentamerous, which would be a very sufficient character whereby to distinguish it from the vast host of plants comprised under the tribe *Ericeæ*, were it but constant. Such, however, is not the case, some flowers being tetramerous. It has, however, two other characters which help to distinguish it from the European heaths, namely, the large sepals, and very pubescent ovary, the latter of which characters I believe it shares with *E. Tetralix* alone. It is considerably the largest-flowered of the northern Heaths.

The locality inhabited by *Pentapera* was long supposed to be the maritime limestone rocks on the west side of the Island of Sicily. It has, however, very recently been found in two distant localities, namely, in Cyprus by Sinterus and Rigo, and by Taubert in Barca (Cyrenaica of the Ancients).

The Kew plant from which this figure was taken was sent by Professor Todaro from the Botanical Garden of Palermo in 1886, and flowered for the first time in May

of the present year in a cool greenhouse. The flowers were pure white, but are described in Gussone's Flora Sicula as flesh-coloured.

Descr. A much-branched shrub one to two feet high; branches slender, erect, all parts viscidly puberulous. *Leaves* uniform, in rather close-set whorls of four, half an inch long, spreading, linear, subacute, dark green, margins recurved, white beneath. *Flowers* in terminal subcorymbose clusters of four to six, pedicelled, nodding or drooping; pedicels a quarter to one-half of an inch long, reddish; bracts like the leaves, but pale pink. *Calyx* five-partite, segments oblong-lanceolate, pale pink, spreading. *Corolla* one-third of an inch long, ovoidly urceolate, terete, white or pale flesh-coloured; lobes small, broadly ovate, obtuse, reflexed. *Stamens* 5, included; filaments short, flat, geniculate near the top; anthers erect, inserted at the back near the base, bipartite, cells slightly diverging, slits elongate. *Disk-glands* obscure. *Ovary* terete or obscurely ten-grooved, truncate, pubescent, white; style elongate, glabrous; stigma capitate; cells five, many-ovuled. *Capsule* crustaceous, loculicidally five-valved, many-seeded. *Seeds* minute, shining.—*J. D. H.*

Fig. 1, Leaf; 2, pedicel and flower; 3 and 4, front and back view of stamens; 5, ovary; 6, transverse section of do.;—*all enlarged*.

del. J.N.Fitch lith

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TAB. 7031.

HEXISIA BIDENTATA.

Native of the United States of Colombia.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus HEXISIA, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 524.)

HEXISIA *bidentata*; internodiis fusiformibus sulcatis vaginatis, foliis 2 oppositis coriaceis linearibus apice obtuse 2-dentatis canaliculatis dorso carinatis, racemis breviter pedunculatis pauciflоris basi vaginatis, pedicellis breviusculis, perianthio patente miniato, sepalis ovato-oblongis obtusis, petalis paullo minoribus, labello sepalis æquilongo lineari-oblongo obtuso, ungue basi columnæ adnato, columnæ auriculis oblongis obtusis marginibus sinuato-2-dentatis, anthera depresso-hemispherica, polliniis 4 subglobosis gracile stipitatis callo viscoso insertis.

H. bidentata, *Lindl. in Hook. Journ. Bot.* vol. i. (1834) p. 8; *Reichb. f. in Walp. Ann.* vol. vi. p. 470, and in *Beitr. Orchid. Centr. Am.* p. 58.

Hexisia, or as it was originally, probably by inadvertence, spelt *Hexisea*, is a small genus of Mexican, Central American, and tropical South American Orchids, of which one species only had previously been figured, the *H. imbricata*, Reichb. f. (as *Diothonea imbricata*) in Lindley's "Sertum Orchidearum," t. 40, f. 1; a native of Roraima in Guiana. The genus was first described as having a closed perianth; an error corrected in the "Genera Plantarum," where, however, the lip is described as erect, which is not the case in the specimen here figured.

H. bidentata was discovered by Cuming in Western Colombia and Panama, and subsequently found by Œrsted in Nicaragua. The plant here figured was procured for F. A. Philbrick, Esq., Q.C., in 1887, and flowered in the Royal Gardens in June of the present year.

DESCR. *Stem* tufted, six to eight inches high, stout, branched, formed of fusiform many-grooved internodes one to two inches long, clothed when young with appressed subacute sheaths. *Leaves* in pairs in the terminal internodes, coriaceous, two to four inches long by a quarter of an inch broad, spreading, linear, obtusely two-fid at the apex, channelled above, keeled beneath, dark green,

Flowers in shortly pedicelled few-flowered racemes from between the leaves; pedicels half an inch long, clothed with ovate-acute sheaths; bracts lanceolate, shorter than the pedicels, which are about half an inch long; flowers suberect; lip anticous. *Perianth* an inch in diameter, spreading, scarlet. *Sepals* ovate-oblong, obtuse. *Petals* rather smaller. *Lip* about as long as the sepals, linear-oblong, sharply deflexed from the claw, which is adnate to the face of the column, sides straight, apex obtusely triangular, disk smooth, base fleshy. *Column* short, side lobes reaching a little above the level of the anther, oblong, obtuse, obtusely two-toothed on the anterior margin. *Anther* four-celled, depressed; pollinia four, subglobose, with slender stalks that are attached to a viscous mass.—*J. D. H.*

Fig. 1, Ovary, lip and column; 2, front view of column; 3. anther; 4, pollinia:—***all enlarged.***

M.S. del, J.N.Fitch lith.

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TAB. 7032.

PRIMULA RUSBYI.

Native of New Mexico.

Nat. Ord. PRIMULACEÆ.—Tribe PRIMULEÆ.

Genus PRIMULA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 631.)

PRIMULA *Rusbyi;* foliis efarinosis oblanceolato-spathulatis subacutis in petiolum angustatis denticulatis, scapo gracili 6–10-flore, involucri albo-farinosi bracteis parvis ovato-lanceolatis linearibusve subacutis, pedicellis elongatis gracilibus, floribus saturate roseis nutantibus, calycis oblongi-farinosi lobis lineari-oblongis acutis erectis, corollæ tubo cylindraceo calyce longiore, limbi subconcavi lobis obcordatis, fauce nudo non dilatato, staminibus parvis inclusis, ovario globoso, stigmate capitellato.

P. Rusbyi, *Greene in Bull. Torrey Bot. Club*, vol. viii. p. 122; *A. Gray, Synopt. Fl. N. Am.* vol. ii. pt. i. p. 399.

One of the most noticeable features in the Flora of North America, as contrasted with that of the temperate Old World, is the almost total absence of Primulas in the low-lying regions of the western continent, and their rarity in its mountains. The number of North American species is only twelve, and are as follows. Three, all Asiatic, are confined in America to the shores of Behring's Straits, namely, *P. nivalis*, Pall., *cuneifolia*, Ledeb., and *borealis*, Duby; *P. egaliksensis*, Hornem., is confined to Greenland, and probably a form of *sibirica*, Jacq., which is widely distributed in the Old World, but is Arctic only in America. *P. mistassinica*, Michaux, a European species also Arctic in America, alone is found as far south as New York and Lake Superior, whence it advances north to the Arctic Sea, and turns south again along the Rocky Mountains, but does not reach Colorado. The common European *P. farinosa* is the most widely distributed of all American Primulas, being found from Maine and Lake Superior throughout the Arctic regions, and descending the Rocky Mountains to Colorado. This leaves four species endemic in Continental America, all confined to the Rocky Mountains, namely, *P. angustifolia* and *suffrutescens*, neither of which has hitherto been introduced into cultivation; the lovely

P. Parryi, Gray, figured at Tab. 6185 of this work, and the species now figured.

P. Rusbyi is the most recently discovered of American Primulas, and was first found in the Mogollon Mountains of New Mexico by the traveller whose name it bears, and subsequently by Pringle on the summit of Mount Wrightson, one of the Santa Rita Mountains, in the adjacent territory of Arizona. The flowers of *P. Rusbyi* are described by Mr. Greene as being as large and as richly coloured as those of *P. Parryi*, a statement not confirmed by a comparison of native specimens or of the figures given in this work. The Kew plants were communicated by Mr. Ware of Tottenham. The introducer of the species (in 1885) was Mr. Dean of Bedfont.

Descr. *Leaves* three to five inches long, not sheathed at the base, narrowly spathulate, subacute, callously crenulate, narrowed into the rather slender petiole, pale green above. *Scape* longer than the leaves, slender, farinose at the tip, and on the short erect lanceolate bracts, and slender pedicels which are suberect and one to two inches long. *Flowers* inclined or drooping. *Calyx* cylindric, one-third of an inch long, cleft to the middle into oblong subacute erect lobes. *Corolla* bright rose-red; tube cylindric, rather longer than the calyx; limb three-quarters of an inch in diameter, lobes obcordate rather incurved, mouth small, yellow, not thickened. *Stamens* very small; anthers linear-oblong. *Ovary* globose, style slender, stigma capitate.—*J. D. H.*

Fig. 1, Apex of leaf; 2, calyx; 3, corolla laid open; 4, pistil:—*all enlarged.*

INDEX

To Vol. XLIV. of the THIRD SERIES, or Vol. CXIV. of the whole Work.

6992 Abies Nordmanniana.
7027 Agave Elemeetiana.
6994 Allium Suworowi.
6981 Aloe Hildebrandtii.
6995 Alpinia officinarum.
6978 Amorphophallus virosus.
7011 Aristolochia Westlandi.
7022 Asarum macranthum.
7004 Asphodelus acaulis.
7028 Begonia Scharffii.
6989 Brodiæa (Triteleia) Howellii.
7026 Calanthe striata.
7014 Caraguata Andreana.
7002 Cassia coquimbensis.
6998 Catasetum Bungerothi.
6991 Cattleya lutea.
6974 Ceratotheca triloba.
7006 Cœlogyne graminifolia.
6979 Cœlogyne Massangeana.
7007 Cyperorchis elegans.
6993 Dendrobium clavatum.
7021 Disa racemosa.
6996 Douglasia lævigata.
7009 Echinocactus Haselbergii.
7017 Erythronium Hendersoni.
6986 Heloniopsis japonica.
7031 Hexisia bidentata.
7018 Howea Belmoreana.
7000 Huernia aspera.
7005 Illicium verum.
7020 Iris Alberti.
7025 Iris Korolkowi.
7029 Iris Suwarowi.
6999 Kœmpferia secunda.
7003 Macrotomia Benthami.
6977 Masdevallia Chestertoni.
6990 Masdevallia gibberosa.
7015 Masdevallia Mooreana.
6985 Mesembryanthemum Brownii.
7016 Narcissus Broussonnetii.
7012 Narcissus Pseudo-Narcissus, *var.* Johnstoni.
6988 Nymphæa (hybrida) kewensis.
6982 Oncidium Jonesianum.
6987 Onosma pyramidalis.
7001 Palicourea nicotianæfolia.
6997 Passiflora violacea.
7030 Pentapera sicula.
7024 Peumus fragrans.
7023 Phaius Wallichii.
6973 Phormium Hookeri.
6984 Primula geraniifolia.
7032 Primula Rusbyi.
6976 Prunus Jacquemontii.
7019 Rhododendron Collettianum.
6980 Salvia scapiformis.
7010 Sarcochilus Hartmanni.
7013 Spathoglottis Vieillardi.
6975 Thunbergia affinis.
7008 Trevesia palmata.
6983 Vanda Sanderiana.